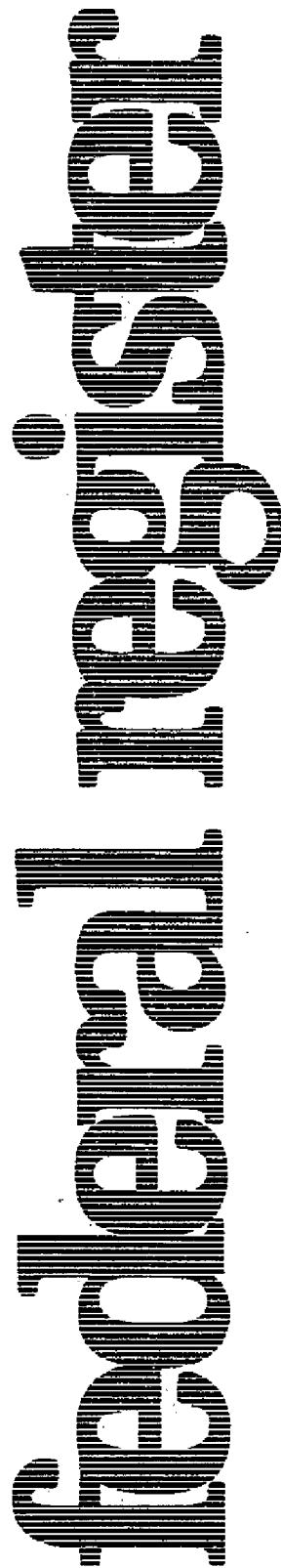

Friday
November 6, 1987



Part II

Department of Transportation

**Research and Special Programs
Administration**

**49 CFR Parts 171 Through 179
Performance-Oriented Packaging
Standards; Proposed Rulemaking**

DEPARTMENT OF TRANSPORTATION**Research and Special Programs Administration****49 CFR Parts 171 through 179****[Docket No. HM-181, Notice No. 87-4]****Performance-Oriented Packaging Standards; Miscellaneous Proposals; Corrections and Supplemental Proposals****AGENCY:** Research and Special Programs Administration (RSPA), DOT.**ACTION:** Notice of proposed rulemaking (NPRM); corrections and supplemental proposals.

SUMMARY: This document revises the notice of proposed rulemaking (NPRM) regarding performance-oriented packaging published on May 5, 1987 (52 FR 16482) to provide supplements and corrections to the proposals contained therein. In the May 5 publication, the Research and Special Programs Administration (RSPA) indicated that because of the magnitude of the proposals contained in the notice, it was inevitable that errors and omissions would come to light subsequent to publication and that a supplementary NPRM would be issued as soon as possible. The supplements and corrections contained in this notice address errors and omissions which have been brought to RSPA's attention since publication of the May 5 NPRM.

DATE: Comments must be received on or before February 26, 1988.

ADDRESSES: Address comments to: Dockets Branch, Research and Special Programs Administration, U.S. Department of Transportation, Washington, DC 20590. Comments should identify the docket and be submitted, if possible, in five copies. Persons wishing to receive confirmation of receipt of their comments should include a self-addressed stamped postcard. The Dockets Branch is located in Room 8426, Nassif Building, 400 Seventh Street SW., Washington, DC 20590, telephone number (202) 366-5046. Public dockets may be reviewed between the hours of 8:30 a.m. and 5:00 p.m., Monday through Friday.

FOR FURTHER INFORMATION CONTACT: Edward T. Mazzullo, Standards Division, Office of Hazardous Materials Transportation, U.S. Department of Transportation, 400 Seventh Street SW., Washington, DC 20590. Telephone: (202) 366-4488.

SUPPLEMENTARY INFORMATION:**I. General Discussion**

This document supplements and corrects Docket HM-181, Notice No. 87-4, published on May 5, 1987 (52 FR 16482). The changes made in this document are generally based on errors and omissions pointed out to RSPA from the publication of the NPRM through August 1, 1987, but also involve supplemental proposals. The preamble discussion contained in the following paragraphs is addressed to the changes made to the May 5 NPRM. This discussion concerns some of the major issues addressed, and a section by section review of the changes. To aid the reader, the corrected regulatory text is republished in its entirety. An itemized listing of changes made in this document is available from the RSPA upon request. A lengthy discussion of the background to this rule is contained in the May 5 NPRM, including its history, a list of major features and a comprehensive section by section review of the proposals. Interested readers should refer to the May 5 NPRM (pages 52 FR 16482 through 16491) for this detailed background information.

Provisions for Tank Cars

On January 27, 1984, RSPA published a final rule (49 FR 3468) under Docket HM-175, entitled "Specifications for Railroad Tank Cars Used to Transport Hazardous Materials". In the preamble to that final rule, it was noted that FRA and RSPA would continue to evaluate the need for new rules for tank car tanks used for hazardous materials. Since publication of the final rule, FRA and RSPA have evaluated information from various sources including, but not limited to research studies and National Transportation Safety Board recommendations. Based upon an evaluation of this information, the May 5 NPRM under Docket HM-181 proposed new tank car standards for certain materials which are toxic by inhalation. The notice also proposed to specify thermal protection, head protection and larger safety valves for certain materials which would be reclassified as flammable gases under the proposed hazard class definitions. The notice further proposed improved outgassing requirements for certain materials and a new requirement for the inerting of tank car tank shipments of acetaldehyde.

In comments to the docket, it was pointed out to RSPA that there were inconsistencies between some of the bulk special provisions in § 172.101 and specific packaging sections in Part 173, that some of the proposed authorizations for use of tank cars were inappropriate for the materials to be

packaged, and that certain tank cars would be rendered obsolete by the proposals. In this document, changes are made to correct inconsistencies and errors relating to authorizations for use of tank cars. Also, "grandfather" provisions are added to permit use of certain currently-authorized tank cars, in those instances where such continued usage is not believed to be detrimental to safety.

It should be noted that RSPA and FRA will continue to evaluate the need for new rules (over and above the proposals contained in the May 5 NPRM and this document) relating to the rail transportation of hazardous materials. For example, the FRA is sponsoring research on thermal and head protection requirements for aluminum tank cars and innovative head protection concepts for all tank cars used for hazardous materials, which may lead to future rulemaking action.

Materials Which Are Toxic By Inhalation

The provisions which were proposed in the May 5 NPRM for determining hazard classes and packing groups for materials which are toxic by inhalation did not specifically address mixtures and did not include limit tests for determining packing groups. To facilitate these determinations without requiring extensive animal testing, a new paragraph is added to § 173.133 to provide two methods of evaluating mixtures for inhalation toxicity. The first method provides for the numerical estimation of the LC₅₀ of a mixture when the concentrations of its individual constituents are known. The second method allows the use of simplified threshold tests with animals when the data are unavailable to conduct the numerical estimation.

One of the most significant proposals in the notice concerns the designation of certain gases and liquids as poisonous (toxic) by inhalation for purposes of hazard communication (i.e., they must be identified on shipping papers and packages as an "Inhalation Hazard") and in some instances, for purposes of packaging, Division 2.3 gases (Packing Groups I, II and III) and Division 6.1, Packing Group I, poisons which are inhalation toxic were made subject to these additional requirements. These materials were identified by Special Provision 10 appearing in Column 7 of the § 172.101 Table in the May 5 NPRM, and appear in the following list:

Acetone cyanohydrin
Acrolein, inhibited
Acrylonitrile, inhibited
Allyl alcohol

Allylamine	Gas identification kit	Sulfuryl fluoride
Ammonia anhydrous	Germene	Tear gas devices (> 2% tear gas substances)
Arsenic trichloride	Hexaethyltetraphosphate and compressed gas mixtures	Tellurium hexafluoride
Arsine	Hexafluoroacetone	Tetraethylidithiopyrophosphate and gases
Boron trichloride	Hydrogen bromide, anhydrous	Tetraethyl lead, liquid
Boron trifluoride	Hydrogen chloride, anhydrous	Tetraethyl pyrophosphate and compressed gas mixture
Bromine	Hydrogen chloride, refrigerated liquid	Thia-4 pentanal
Bromine chloride	Hydrogen cyanide, anhydrous	Thiophosgene
Bromine pentafluoride	Hydrogen sulfide, liquefied	Titanium tetrachloride
Bromine trifluoride	Insecticide gases, toxic, n.o.s.	Trimethyl chlorosilane
Bromoacetone	Iron pentacarbonyl	Trimethoxy silane
sec-Butyl chloroformate	Isopropyl chloroformate	Tungsten hexafluoride
n-Butyl isocyanate	Methacrylonitrile, inhibited	Xylyl bromide
tert-Butyl isocyanate	Methoxymethyl isocyanate	Based on further review and evaluation of available data, RSPA believes that a number of these materials are incorrectly designated as toxic by inhalation and that certain other materials should be designated as being toxic by inhalation. In addition, there are a number of materials for which data are insufficient to make a conclusive determination. These categories of materials are set forth as follows:
Carbon dioxide and ethylene oxide mixtures	Methylamine, anhydrous	<i>Materials for which Special Provision 10 is added in this notice:</i>
Carbon monoxide, cryogenic	Methyl bromide	Allyl chloroformate
Carbon monoxide gas	Methyl bromide and ethylene dibromide mixtures, liquid	n-Butyl chloroformate
Carbon monoxide and hydrogen mixture	Methyl chloride	Chloroacetone, stabilized
Carbonyl fluoride	Methyl chloroformate	Chloroacetophenone, solid
Carbonyl sulfide	Methyl chloromethyl ether	Chloroformates (not all mixtures)
Chlorine	Methyl chlorosilane	Diketene
Chlorine pentafluoride	Methyl dichloroarsine	Dimethyl thiophosphoryl chloride
Chlorine trifluoride	Methyl dichlorosilane	Diphenylamine chloroarsine
Chloroacetic acid	Methylene isocyanate	Ethyl phosphonothioic dichloride, anhydrous
Chloro acetonitrile	Methyl hydrazine	Hexachlorocyclopentadiene
Chloroacetophenone, liquid	Methyl isocyanate	Nitric acid, with more than 70% nitric acid
Chloropicrin	Methyl isothiocyanate	Pentaborane
Chloropicrin/Methyl bromide	Methyl mercaptan	Sulfur chloride (mono)
Chloropicrin/Methyl chloride	Methyl orthosilicate	Sulfur trioxide
Chloropicrin mixtures, n.o.s.	Methylphosphonic dichloride	Tetranitromethane
Chloropivaloyl chloride	Methylphosphorous dichloride	Thionyl chloride
Coal gas	Methyltrichlorosilane	<i>Materials for which Special Provision 10 is removed from the § 172.101 Table in this notice:</i>
Compressed or liquefied gases, flammable, toxic, n.o.s.	Nickel carbonyl	Di-n-amylamine
Compressed or liquefied gases, toxic, n.o.s.	Nitric acid, fuming	Di-(n-butyl) amine
Crotonaldehyde, stabilized	Nitric oxide	Epichlorohydrin
Cyanogen, liquified	Nitric oxide and nitrogen tetroxide mixtures	Ethyl chloride
Cyanogen bromide	Nitrogen dioxide, liquefied	Ethyltrichlorosilane
Cyanogen chloride	Nitrogen trifluoride	Furan
Cyclohexyl isocyanate	Nitrogen trioxide	Methacrylonitrile, inhibited
Diborane	Nitrosyl chloride	Tetraethyl lead, liquid
Dichlorodifluoromethane and ethylene oxide mixture	Nitrous oxide, compressed	Thia-4-pentanal
Dichlorosilane	Nitrous oxide, refrigerated	<i>Materials which remain in the § 172.101 table designated, by Special Provision 10, as toxic by inhalation for which data are inconclusive:</i>
3,5 Dichloro-2,4,6 trifluoropyridine	tert-Octyl mercaptan	Acrylonitrile, inhibited
Dimethylamine, anhydrous	Organic phosphate mixed with compressed gas	Dimethyldichlorosilane
Dimethyldichlorosilane	Oxygen difluoride	Methyl dichlorosilane
Dimethyl hydrazine, unsymmetrical	Parathion and compressed gas mixture	
Dimethyl hydrazine, symmetrical	Perchloro methylmercaptan	
Di-n-amylamine	Perchloryl fluoride	
Di-(n-butyl) amine	Phenyl carbylamine chloride	
Dimethyl phosphorochloridothioate	Phenyldichloroarsine	
Diphenylchloroarsine	Phenyl isocyanate	
Epichlorohydrin	Phenyl mercaptan	
Ethyl chloride	Phenyl trichlorosilane	
Ethyl chloroformate	Phosgene	
Ethyl chlorothioformate	Phosphine	
Ethyl dichloroarsine	Phosphorus oxychloride	
Ethylene chlorhydrin	Phosphorus pentafluoride	
Ethylene dibromide	Phosphorus trichloride	
Ethylene imine	n-Propyl chloroformate	
Ethylene oxide	Selenium hexafluoride	
Ethyl fluoride	Silicon tetrafluoride	
Ethyl isocyanate	Sibine	
Ethyltrichlorosilane	Sulfur dioxide, liquefied	
Fluorine, gas	Sulfur tetrafluoride	
Furan		

Methyl trichlorosilane
Phenyl trichlorosilane
Trimethyl chlorosilane

Materials which may be toxic by inhalation but are not designated as such by Special Provision 10 in the § 172.101 Table:

Chloropicrin mixtures, n.o.s.
Chlorosulfonic acid
Cumyl hydroperoxide
Ethyl phosphorous dichloride
Hydrazine
Hydrobromic acid, greater than 49% concentration
Isophorone diisocyanate
Methyl fluoride
Methyl parathion
Nitrocresol
Phosphorous pentachloride
Phosphorous pentoxide
Pivaloyl chloride
Propyl trichlorosilane
Sulfuric acid, fuming
Sulfuryl chloride
Tetraethyl dithiopyrophosphate
Thionyl chloride
Tributyl amine
Trimethyl acetyl chloride
Vanadium oxytrichloride

RSPA is considering further rulemaking action under Docket HM-198 to address issues involving inhalation toxic materials, such as classification, test criteria and packing group criteria. However, RSPA requests comments in this docket addressed to the toxicity of specific materials and other issues involving toxicity by inhalation.

Section 172.101 Table

The preamble to the § 172.101 Table is revised to be consistent with the changes made under Docket HM-145F for hazardous substances. Also, it is proposed, in paragraph (c)(10) of § 172.101, to adopt criteria contained in the UN Recommendations for selection of shipping names for mixtures and solutions.

With the exception of "n.o.s." entries, all entries for hazardous substances in the ORM-E hazard class (89) are removed from the Table. Approximately 50 names for hazardous substances in classes other than ORM-E are also removed. Exclusive of the ORM-E entries, approximately 490 entries in the § 172.101 Table are revised. The Table presented in the May 5 NPRM was based on the 1984 edition of the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Technical Instructions). The vast majority of changes (257) to the Table consist of updating shipping names (additions, deletions and revisions) and aircraft

quantity limitations (revisions) to be consistent with both the United Nations Recommendations on the Transport of Dangerous Goods (UN Recommendations), fourth revised edition, and the 1987-1988 edition of the ICAO Technical Instructions. Consistency with the ICAO Technical Instructions is not maintained for poisonous materials in Packing Group I and gases which are toxic by inhalation for which RSPA proposes that they not be permitted for transport aboard aircraft. A series of "n.o.s." entries (i.e., "not otherwise specified") is added to address inhalation toxic liquids which are not specifically named (e.g., "Poisonous liquids, n.o.s., *inhalation hazard, Packing Group I, Zone A*"), to correct a deficiency in the May 5 NPRM. Other changes include corrections of typographical and spelling errors (114) and revisions and additions of shipping descriptions to eliminate errors and omissions (72). A listing of the specific changes is available from RSPA upon request.

Columns 10A, 10B and 10C contain stowage requirements for hazardous materials aboard vessels. Although not presented in the regulatory text of this document, RSPA proposes to eliminate these requirements and in their place to require compliance with stowage requirements contained in the International Maritime Dangerous Goods Code (IMDG Code). This would simplify the § 172.101 Table and recognizes RSPA's belief that, as a practical matter, compliance with the IMDG Code is necessary for shipments by vessel at present. Comments addressed to this proposal are requested.

Labeling and Placarding

The May 5 NPRM is modified to include provisions for the Class 9 label which were recently added to the UN Recommendations and to include requirements for multiple labeling based on the UN Recommendations. It is proposed to not require placards for Division 6.1, Packing Group III (i.e., "KEEP AWAY FROM FOOD") because placards for this class serve little, if any, useful purpose from the standpoint of emergency response. Also, no placards are proposed for Class 9.

Section 172.510 is modified to require display of POISON or POISON GAS placards on square backgrounds on rail cars for those materials in Division 2.3 or 6.1 which meet Packing Group I criteria for inhalation toxicity. As originally proposed, all packing groups within Division 2.3 would require the square background and Division 6.1 materials which are toxic by inhalation

(some of which are currently Poison A materials) would not require the square background. RSPA does not believe that Packing Group II or III materials warrant the same restrictive handling provisions as now apply to Poison A materials, whereas Packing Group I materials (both liquids and gases) do.

Participation in International Standards-Setting Organizations

As discussed in the May 5 NPRM, the RSPA participates in the activities of a number of organizations which promulgate international standards involving the transportation of hazardous materials: the United Nations Committee of Experts on the Transport of Dangerous Goods, and its subsidiary bodies, the Group of Experts on Explosives and the Group of Rapporteurs; the International Maritime Organization; the Dangerous Goods Panel of the International Civil Aviation Organization; the Economic Commission for Europe Group of Experts on the Transport of Dangerous Goods; and, the International Atomic Energy Agency. In the past, RSPA has apprised the public of its involvement in international activities through periodic public meetings, announced in the Federal Register, in which RSPA representatives provide briefings on the international activities. In many instances, RSPA representatives are supported at international meetings by industry experts in specific areas such as explosives and organic peroxides, and work with representatives of the regulated industry in developing policies and proposals. Further, the Hazardous Materials Advisory Council (HMAC), a non-profit organization having membership from all segments of industry involved in hazardous materials transportation, holds formal observer status at U.N. meetings. HMAC has a special committee which devotes itself to international issues and RSPA has actively participated in its meetings. However, some members of the industry have commented that there is a need for more industry participation in the development of proposals by RSPA for presentation at the international meetings and in the evaluation of proposals developed by other participants in the international meetings. Comments addressed to this issue are requested. For example, when RSPA personnel participate in a HMAC meeting, it must be open to non-HMAC members during such participation. On that basis, is it necessary that RSPA resources be expended to establish a new forum for discussion of international issues?

II. Review by Sections

The following review by sections addresses only the corrections and supplements to the May 5 Nprm. For a comprehensive review by sections, interested persons should refer to the preamble of the May 5 Nprm (pages 52 FR 16491 through 16510).

Part 171; General Information, Regulations and Definitions.

Section 171.7. In § 171.7, the table of material incorporated by reference in paragraph (c) is revised to correct typographical errors in nine of the entries.

Section 171.8. In § 171.8, the definitions for "Composite packaging", "UN standard packaging", and "Water reactive material" are revised to correct typographical errors.

Section 171.11. In § 171.11, paragraph (c) is revised to require compliance with 49 CFR requirements, rather than the ICAO Technical Instructions, for materials which are toxic by inhalation.

Section 171.12. In § 171.12, paragraph (b) is revised to clarify application of provisions of the IMDG Code. Compliance with 49 CFR requirements, rather than the IMDG Code, would be required for materials which are toxic by inhalation. Acceptance of packagings conforming to the IMDG Code, rather than to specific 49 CFR packaging requirements, would be limited to non-bulk packagings only.

Part 172; Hazardous Materials Table, Special Provisions and Hazardous Materials Communications and Regulations.

Section 172.101. In the preamble to the § 172.101 Table, paragraph (b) is revised to remove the letter "E" as a symbol in Column 1 of the Table; paragraphs (b)(2) and (b)(6) are revised to include reference to hazardous substances and hazardous wastes, rather than to the "E" symbol; and subparagraph (b)(4) is removed. Subparagraph (c)(9) is revised to include reference to the Appendix to the § 172.101 Table which designates hazardous substances under CERCLA. Subparagraph (c)(10) is revised to implement provisions from the UN Recommendations for determining the proper shipping names for mixtures and solutions. Subparagraph (c)(12)(ii) is revised by adding the words "and packing group" after the words "hazard class" in the first sentence.

In the § 172.101 Table, changes are made to remove the "E" symbol, RQ designations, and obsolete shipping names for hazardous substances. As previously discussed, over 400 entries are revised to align the Table more closely with the UN Recommendations

and the ICAO Technical Instructions, and to correct errors and omissions.

Section 172.102. In § 172.102, Special Provisions in subparagraphs (c)(1), (c)(2), (c)(3), (c)(5) and (e)(7)(ii) would be revised to correct errors and omissions and eliminate inconsistencies. Substantive changes include the addition of Special Provisions 12 and 13, for inhalation toxic materials, exclusion of multi-unit tank car tanks from Special Provision B14, concerning insulation of tanks, and revision of Special Provisions B30 through B32 to "grandfather" certain currently used tank cars for materials which meet Division 2.3 criteria. Special Provisions B42 through B53 are added to address discrepancies in the original proposal.

Section 172.313. In § 172.313, the word "outer" is added between the words "plastic" and "packaging" to clarify that requirements to mark "POISON" on plastic packagings do not apply to inner receptacles such as liners.

Section 172.330. In § 172.330, subparagraph (a)(2) is revised to clarify that shipping name markings on multi-unit tank car tanks need only be two inches high. Paragraph (f) would be removed to eliminate an obsolete labeling provision.

Section 172.400. In § 172.400, the table in paragraph (b) is changed to add the CLASS 9 label.

Section 172.400a. In § 172.400a, subparagraph (a)(8) would be added to read "A package containing Division 1.4, Compatibility Group S, material" to provide a labeling exception for Division 1.4S materials.

Section 172.402. Paragraph (a) of § 172.402 is revised to propose labeling for multiple hazards which is consistent with Chapter 13 of the UN Recommendations.

Section 172.446. A new § 172.446 is added to adopt a CLASS 9 label for miscellaneous hazardous materials, for consistency with the UN Recommendations.

Section 172.504. In § 172.504, paragraph (e), the entries for "Division 1.3" are moved from Table 2 to Table 1 to require placarding for any quantity of Division 1.3 materials, consistent with existing provisions for Class B explosives. It is proposed not to require placarding for Division 6.1, Packing Group III, materials; therefore, in Table 2 the placard name for "Division 6.1 (PGIII)" is changed from "KEEP AWAY FROM FOOD" to "(None)". The entry in Table 2 for Class 7 "Radioactive Yellow-III label" is removed, as these materials are subject to Table 1 placarding requirements. A new subparagraph (f)(6) would be added to § 172.504 to provide

a placarding exception for Division 1.4S explosives.

Section 172.510. Paragraph (a) of § 172.510 is revised to require that placards be displayed on square backgrounds on rail cars transporting Explosives 1.1 and 1.2 materials and Packing Group 1 materials which are toxic by inhalation. The May 5 notice did not address Division 6.1 materials that are toxic by inhalation and required the square background for all packing groups of Division 2.3 materials.

Section 172.519. In § 172.519, subparagraph (a)(3) is amended to change "200 pounds" to read "175 pounds", and to add the phrase "(waterproofing materials included)" at the end of the paragraph, for consistency with changes promulgated under Docket HM-166U (52 FR 13034) on April 20, 1987.

Section 172.547. In § 172.547, paragraph (b) is revised to change the size of the letters in the word "SPONTANEOUSLY" from "33mm (1.3 inches)" to read "25.4mm (1.0 inches)" to eliminate a problem with regard to size of lettering on the SPONTANEOUSLY COMBUSTIBLE placard.

Section 172.553. § 172.553 is removed, since it is proposed not to prescribe a placard for Division 6.1, Packing Group III, materials.

Part 173; Shippers, General Requirements for Shipments and Packagings.

Section 173.2a. In § 173.2a, paragraph (c), the precedence of hazard table is amended to correct a typographical error (for row 3 I and column 8 I(1), the entry "8" is changed to "3"); for consistency with the UN Recommendations with regard to classifying pesticides which are both flammable and poisonous (a footnote is added to require that pesticides which meet both Class 3, Packing Group III, and Division 6.1, Packing Group III, be classed in Division 6.1); and to reflect new criteria in the UN Recommendations for assigning packing groups to Class 4 materials.

Section 173.12. In § 173.12, paragraph (c), on reuse of packagings for waste materials, is revised to clarify that the provisions of § 173.28 do not apply.

Section 173.24. In paragraph (b)(1), the phrase "Except as otherwise provided" is added to clarify that there are instances, such as when vented packages are authorized, when release of hazardous materials to the environment are permitted.

Section 173.24a. In § 173.24a, subparagraph (c)(iii), the spelling of the word "receptacles" is corrected.

Section 173.24b. Paragraph (b)(3) is revised to require five percent outage only for Division 6.1, Packing Group I, liquids, rather than for all inhalation toxic liquids regardless of packing group. It is believed to be unnecessarily restrictive to require this amount of outage for Division 6.1, Packing Groups II and III, materials which are toxic by inhalation.

Paragraph (d) is added to prohibit the use of tank cars equipped with heating coils for Division 2.3 and Division 6.1, Packing Group I, materials toxic by inhalation, for safety reasons.

Section 173.27. In § 173.27, paragraph (a) would be revised by adding the phrase "containing Class 4, 5, or 8 materials" to eliminate a major difference between proposed provisions for air shipments and the ICAO Technical Instructions. Subparagraph (c)(3)(ii) is amended to change "178.504(a)(5)" to read "178.503(a)(5)".

Section 173.28. In § 173.28, subparagraph (a)(2) is revised to require that the leakproofness test for reuse of packagings be conducted using an internal air pressure of at least 7.0 pounds. This proposal addresses concerns expressed by members of industry concerning the inadequacy of test pressures in the UN Recommendations. RSPA believes that the increased test pressure may be necessary to detect leaks in used packagings which may contain residues of their previous contents. RSPA is not convinced that pressures higher than those proposed in § 178.604 are necessary for detecting leaks in new packagings and requests comments on this issue.

Section 173.31. In § 173.31, provisions for retest of tank cars currently contained in Footnote v of Refest Table 1 in paragraph (c) are relocated to subparagraph (a)(13). Paragraph (a)(12) is revised to require reclosing pressure relief devices on tank cars used for Class 2 gases and Classes 3, 4, and Division 6.1 liquids, with the exception of Packing Group III of Division 6.1.

Section 173.32. In § 173.32, in paragraph (s), "Kpa" is corrected to "kPa".

Section 173.115. In paragraph (c)(2), reference to LC50 criteria in § 173.132 is added.

Section 173.120. In paragraph (a)(1)(i), the section reference "§ 173.300" is corrected to read "§ 173.115".

Section 173.124. In paragraph (a), the definition for "flammable solid" is revised for consistency with the UN Recommendations. Paragraph (d) is added to recognize new criteria which will appear in Chapter 14 of the UN Recommendations for evaluating

materials for inclusion in Class 4. These criteria are available from the RSPA upon request.

Section 173.125. This section is revised to recognize new criteria which will appear in Chapter 14 of the UN Recommendations for determining packing groups for Class 4 materials. These criteria are available from the RSPA upon request.

Section 173.128. Paragraph (c) is added to recognize new criteria, which will appear in Chapter 14 of the UN Recommendations, for evaluating materials for inclusion in Class 5. These criteria are available from the RSPA upon request.

Section 173.132. In Figure 1 of paragraph (a), the graph is revised editorially by changing the word "Class" to "Division" and by deleting the symbols which appear at the right extreme of the horizontal axis. In paragraph (a)(3)(ii), the first occurrence of the word "not" is in error and is removed. In paragraph (b)(3), reference is included to criteria in § 173.133(b) for LC₅₀ determinations for mixtures and for limit tests.

Section 173.133. Paragraph (b) is added to provide alternatives to testing for inhalation toxicity for mixtures and solutions (subparagraph (b)(1)) and to provide simplified threshold toxicity tests (i.e., limit tests) when the LC₅₀ of mixtures is to be determined through testing [subparagraph (b)(2)].

Section 173.137. This section is revised to correct the format and to clarify that the three packing groups for Class 8 are mutually exclusive.

Section 173.150. In § 173.150, in the first sentence in paragraph (b), "Class 8" is corrected to read "Class 3". In subparagraph (f)(3)(vii), "173.21," is inserted between "173.1," and "173.24". Also, paragraph (e) is revised to provide an exception from the regulations for aqueous solutions of alcohol containing at least 50 percent water, similar to the exception provided at present in § 173.115(b)(2)(ii). The exception was unintentionally omitted in the May 5 NPMR.

Section 173.154. Paragraph (d) is revised to provide an exception for materials which are corrosive only to steel, when transported in bulk packagings, similar to the exception provided at present in § 173.245(b). The exception was unintentionally omitted in the May 5 NPMR.

Section 173.158. In § 173.158, at the end of subparagraph (f)(2), the number "1" in front of paragraph (g) is removed and paragraph (g) is moved to the left margin, to correct a format error.

Section 173.159. In § 173.159, subparagraph (g)(1) is amended to

change the word "nor" to read "with not" in the first sentence, to correct an editorial error.

Section 173.164. In § 173.164, subparagraph (a)(3) is amended to change the symbol for kilograms from "Kg" to "kg", in the last sentence. The introductory text of paragraph (a) is revised to clarify that the specified packaging, at the Packing Group I performance level, is only required for transportation by aircraft. Paragraph (c) is added to provide packagings, at the Packing Group III performance level, for transportation in other modes and paragraph (d) is added to provide an exception for quantities of mercury of less than one pound (i.e., less than a reportable quantity) when transported by motor vehicle or rail car.

Section 173.181. In § 173.181, subparagraph (c)(1) is revised to change the word "incombustible" to read "noncombustible".

Section 173.185. In § 173.185, subparagraph (i)(5) is amended to change the word "packagers" to read "packagings".

Section 173.186. In § 173.186, paragraph (c) is amended to change the word "matdrails" to read "materials", and, in paragraph (e) in the first sentence, the word "packagings" is amended to read "packagings".

Section 173.192. In § 173.192, paragraph (a) is revised to authorize use of Specification 3D and 33 cylinders, as are currently authorized.

Section 173.195. In § 173.195, paragraph (a)(2) is revised to authorize use of Specification 3A480 cylinders and paragraph (b) is revised to permit use of alternate means of testing for leakage, other than with picrotic paper, without the need for approval.

Section 173.198. In § 173.198, subparagraph (c)(2)(ii) is amended to change the word "packagings(s)" to read "packagings", in the second and third sentences.

Section 173.213. In § 173.213, paragraph (b) is amended to change the identification code for a plastic jerrican from "3112" to "3H2".

Section 173.216. In § 173.216, subparagraph (d)(2) is amended to change the word "cosignor" to read "consignor".

Section 173.225. The Organic Peroxides Table in paragraph (b)(4) is updated to include organic peroxides with identification numbers UN3058 through UN3081.

Section 173.226. In § 173.226, subparagraph (c)(2) is amended to change the phrase "back-off of" to read "back-off or", in the fourth sentence.

Section 173.227. In § 173.227, subparagraph (b)(3)(ii) is amended to change the phrase "drum is" to read "drum is—", at the end of the sentence.

Section 173.228. In § 173.228, paragraph (a) is amended to change the section citation "§ 172.101" to read "§ 172.101", in the first sentence.

Section 173.230. In § 173.230, paragraph (a) is amended to change the section cite "§ 473.306" to read "§ 173.306".

Subpart F of Part 173. In Subpart F of Part 173, the term "tank cars" is revised to read "tank car tanks" wherever it appears, and the term "110 tank car tanks" is revised to read "110 multi-unit tank car tanks" wherever it appears, in order to use more precise terminology.

Section 173.240. In § 173.240, paragraph (c) is revised to change the section title from "Portable tanks and bins" to read "Portable tanks, bins and other bulk packagings," and to authorize non-specification bulk packagings other than portable tanks and bins, such as flexible bulk containers.

Section 173.241. In § 173.241, paragraph (c) is amended by deleting the word "metal", in order to allow use of non-metallic (e.g., polyethylene) portable tanks for certain low hazard materials, and by adding a sentence to the paragraph to specify valves and minimum design pressures for DOT 57 portable tanks used for the transport by water of Class 3, Packing Group II, materials, consistent with existing provisions for water transport.

Section 173.242. In paragraph (a), AAR 206W and 211W tank cars are removed from the list of authorized tank cars, to correct an error. In paragraph (c), a sentence is added to specify valves and minimum design pressures for DOT 57 portable tanks used for the transport by water of Class 3, Packing Group II, materials, consistent with existing provisions.

Section 173.245. Upon further consideration by the RSPA and FRA, paragraph (a) is revised to remove the authorization for use of DOT 105S500W and 112S500W tank cars for Division 2.3 gases and to add authorization to use DOT 112T500 tank cars. Also, a requirement is added that tank car appurtenances, dome fittings, safety devices, loading and handling procedures, etc., be approved. This is similar to existing approval provisions for Poison A materials.

Section 173.248. In § 173.248, paragraph (a) and the introductory text preceding it are revised to authorize certain tank cars that are currently authorized for ethylene oxide. Paragraph (b) is removed and reserved to remove authorizations for use of cargo tanks.

These changes are based on further consideration by the RSPA and FRA.

Section 173.306. In paragraph (h)(1) the spelling of the word "COMPLY" is corrected.

Section 173.314. This section is substantially revised to implement bulk packaging provisions for tank cars consistent with proposed packaging provisions in other sections. Paragraph (a) is revised to correct an erroneous section reference. Paragraph (b) is revised to require all single unit tank cars carrying flammable or poisonous gases or hydrogen fluoride to be marked with the name of contents. Paragraph (c) is revised to correct section references for preparing compressed gases for shipment. The table in paragraph (c) is revised to include requirements for head protection, thermal protection, and larger safety valves for certain materials; to remove from the table those commodities that do not have specific outage or tank test pressure requirements, to remove notes rendered obsolete by other proposed changes, and to revise certain notes. Paragraphs (d) and (f) are removed since those provisions would be contained in §§ 173.24b and 173.31. New paragraph (i) is added to incorporate the provisions of § 179.102-11(a).

Section 173.322. Paragraph (d) is added to authorize specification cylinders as a packaging for ethyl chloride.

Section 173.323. In § 173.323, subparagraphs (b)(1), in the first sentence, and (b)(2), in the second sentence, are revised to change the word "incombustible" to read "noncombustible".

Part 178; Specifications For Packagings.

Section 178.0-3. In § 178.0-3, subparagraph (a)(3) is amended to change the word "permancy" to read "permanency".

Section 178.502. In § 178.502, subparagraph (a)(1)(ii) is amended to change the word "barrell" to read "barrel".

Section 178.503. In § 178.503, in subparagraph (d)(1) the UN symbol which was missing from the May 5 NPRM is added; also, in subparagraphs (d)(2)(i) and (d)(2)(ii) the examples of markings are revised for clarity.

Section 178.516. In § 178.516, paragraph (b)(3) is revised for clarity.

Section 178.521. In § 178.521 subparagraph (b)(2) is amended to change the words "waterresistant" to read "water resistant", in the first sentence.

Section 178.523. In § 178.523, subparagraph (b)(2)(x) is amended to

change the words "highdensity" to read "high density", in the second sentence.

Section 178.601. In § 178.601, a sentence would be added between the second and third sentences in paragraph (c) to clarify that the chemical compatibility test for plastic packagings need not be repeated during periodic retesting. In the second sentence, the word "compatibility" is corrected.

Section 178.602. In § 178.602, paragraph (g) is revised to clarify that the chemical compatibility test for plastic packagings need not be repeated during periodic retesting.

Section 178.608. § 178.608 is revised for clarity. As proposed, each hazardous material for which a packaging is intended for use would have to be compatibility tested in that package. In those instances where packages are intended for use for many products, this may impose an onerous burden on the packaging manufacturer. Comments are requested with regard to alternatives to testing each hazardous material for which a packaging is intended for use.

Part 179; Specifications for Tank Cars.

Section 179.101-1. The section reference, "§ 179.100-18" is corrected to read "§ 179.100-4".

Section 179.102. The proposal to remove this section in its entirety is withdrawn in order to retain some of the commodity specific requirements which appear in the section.

Section 179.105. In paragraph (c), "ethylene oxide" is changed to "a Division 2.3 material" to provide the option, for poisonous gases, of using increased insulation in conjunction with smaller valves.

III. Administrative Notices

Executive Order 12291

The effect of this rule, as proposed, does not meet criteria specified in section 1(b) of Executive Order 12291 and is, therefore, not a major rule, but is a significant rule under the regulatory procedures of the Department of Transportation (44 FR 11034). This proposed rule does not require a Regulatory Impact Analysis, or an environmental impact statement under the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*). A regulatory evaluation and flexibility analysis is available for review in the Docket.

Impact on Small Entities

Based on limited information concerning size and nature of entities likely affected by this proposed rule, I certify this proposal will not, if promulgated, have a significant economic impact on a substantial

number of small entities. This certification is subject to modification as a result of a review of comments received in response to this proposal. A preliminary regulatory flexibility analysis is available for review in the docket.

Paperwork Reduction Act

Information collection requirements contained in this proposal are being submitted for approval to the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96-511).

List of Subjects

49 CFR Part 171

Hazardous material transportation, Definitions.

49 CFR Part 172

Hazardous materials transportation, Markings, Labels, Placards, Packaging.

49 CFR Part 173

Hazardous materials transportation, Packaging.

49 CFR Part 174

Hazardous materials transportation, Rail carriers.

49 CFR Part 175

Hazardous materials transportation, Air carriers.

49 CFR Part 176

Hazardous materials transportation, Maritime carriers.

49 CFR Part 177

Hazardous materials transportation, Motor carriers.

49 CFR Part 178

Hazardous materials transportation, Packaging specifications and standards.

49 CFR Part 179

Hazardous materials transportation, Tank cars.

In consideration of the foregoing, 49 CFR Parts 171 through 179 would be amended as follows:

PART 171—GENERAL INFORMATION REGULATIONS AND DEFINITIONS

1. The authority citation for Part 171 would continue to read as follows:

Authority: 49 U.S.C. 1803, 1804, 1805, 1808; 49 CFR Part 1.

§ 171.3 [Amended]

1a. In § 171.3, paragraph (e) preceding Note 1 would be removed.

2. In § 171.7, paragraph (d) would be removed and paragraph (c) would be revised to read as follows:

§ 171.7 Matter incorporated by reference.

(c) *Table of material incorporated by reference.* The following Table sets forth material incorporated by reference. It gives the name and address of the organization from which the material is available, the name of the material, and the section(s) of this subchapter, other than § 171.7, in which the matter is referenced.

Source and name of material	49 CFR reference
The Aluminum Association, 420 Lexington Avenue, New York, NY 10017: Aluminum Standards and Data, 1970-71, December 1969.....	178.65-5.
Aluminum Standards and Data, Sixth Edition, 1979	
Aluminum Standards and Data, Seventh Edition, June 1982	
American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018: ANSI B9.1-64, Safety Code for Mechanical Refrigeration, 1964 Edition	173.306.
ANSI B 16.5-77 Steel Pipe Flanges, Flanged Fittings	178.34.
ANSI N14.1-71 Packaging of Uranium Hexafluoride for Transport, 1982 Edition	173.417.
American Society of Mechanical Engineers, United Engineering Center, 354 47th Street, New York, NY 10017: ASME Code, Section VIII (Division 1) and IX of 1977 Edition of American Society of Mechanical Engineers Boiler and Pressure Code Addenda through December 31, 1979.	173.32; 173.33; 173.306; 173.315; 177.814; 178.245; 178.251; 178.255; 178.337; 178.338; 178.340; 178.342; 178.343; 179.400.
ASME Code, Section V (FR Nondestructive Examination, 1977.....	173.33.
ASME Code, Section IX (FR Welding and Brazing Qualification 77 and Addendum 79).....	178.245; 178.340; 178.270; 178.337; 178.338.
American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103: Noncurrent ASTM Standards are available from: Engineering Societies Library, 354 E. 47th Street, New York, NY 10017.	
ASTM A 20-81 Standard Specification for General Requirements for Steel Plates for Pressure Vessels, Revision C, 1982.....	178.337.
ASTM A 47-68 Malleable Iron Castings.....	179.200.
ASTM A 53-69a Welded and Seamless Steel Pipe	179.12-2.
ASTM A 178-70 Electric Resistance Welded Carbon Steel Boiler Tubes.....	179.12.
ASTM A 192-69 Seamless Carbon Steel Boiler Tubes for High Pressure Service.....	179.12.
ASTM A 211-75 Standard Specification for Spiral-Welded Steel or Iron Pipe App.B.....	192.113; Part 192; 195.106.
ASTM A 240-82 Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Fusion-Welded Unfired Pressure Vessels, Revision A.....	173.57; 179.100; 179.200; 179.201; 179.220; 179.400.
ASTM A 242-81 Standard Specification for High-Strength Low-Alloy Structural Steel, 1982.....	179.100.
ASTM A 262-68 Recommended Practices for Detecting Susceptibility to Intergranular Attack in Stainless Steels.....	179.200.
ASTM A 269-69 Seamless and Welded Austenitic Stainless Steel Tubing for General Service	179.12.
ASTM A 285-78 Pressure Vessel Plates, Carbon Steel, Low and Intermediate-Tensile Strength.....	179.100; 179.200; 179.220; 179.300.
ASTM A 300-58 Steel Plates for Pressure Vessels for Service at Low Temperatures	178.337.
ASTM A 300-68 Notch Toughness Requirements for Normalized Steel Pressure Plates for Pressure Vessels.....	179.102.
ASTM A 302-78 Pressure Vessel Plates, Alloy Steel, Manganese-Molybdenum and Manganese-Molybdenum Nickel.....	179.100; 179.200; 179.220.
ASTM A 312-70a Seamless and Welded Austenitic Stainless Steel Pipe	179.12.

Source and name of material	49 CFR reference
ASTM A 333-67 Seamless and Welded Steel Pipe for Low-Temperature Service.....	178.45.
ASTM A 370-77 Standard Methods and Definition for Mechanical Testing of Steel Products, 1982.....	179.102.
ASTM A 388-67 Ultrasonic Testing and Inspection of Heavy Steel Forging	178.45.
ASTM A 441-81 Standard Specification for High-Strength Low-Alloy Structural Manganese Vanadium Steel.....	178.398.
ASTM A 514-81 Standard Specification for High-Yield Strength Quenched and Tempered Alloy Steel Plate, Suitable for Welding.....	178.338.
ASTM A 515-69 Carbon Steel Plates for Pressure Vessels for Intermediate and Higher Temperature Service.....	179.100; 179.200; 179.220; 179.300.
ASTM A 516-79b Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate and Lower-Temperature Service, 1982 Edition.....	178.337; 179.100; 179.102; 179.200; 179.220.
ASTM A 537-80 Standard Specification for Pressure Vessel Plates, Heat-Treated, Carbon-Manganese-Silicon Steel, 1982 Edition.....	179.100.
ASTM A 572-82 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality, 1982 Edition.....	178.338; 179.100.
ASTM A 588-81 Standard Specification for High-Strength Low-Alloy Structural Steel with 50 Ksi Minimum Yield Point to 4 in. Thick.....	179.100; 178.338.
ASTM A 606-75 Standard Specification for Steel Sheet and Strip Hot-Rolled and Cold-Rolled, High-Strength, Low-Alloy, with Improved Atmospheric Corrosion Resistance, 1975 (Reapproved 1981).....	178.338.
ASTM A 612-7a High Strength Steel Plates for Pressure Vessels for Moderate and Lower-Temperature Service.....	178.337.
ASTM A 633-79a Standard Specification for Normalized High-Strength Low-Alloy Structural Steel, 1979 Edition.....	178.338.
ASTM A 715-81 Standard Specification for Steel Sheet and Strip, Hot-Rolled, High-Strength, Low-Alloy, with Improved Formability, 1981.....	178.338.
ASTM B 90-69 Magnesium Alloy Sheet and Plate.....	178.251.
ASTM B 161-70 Nickel Seamless Pipe and Tube, 1970	179.12.
ASTM B 162-69 Nickel Plate, Sheet, and Strip	179.200.
ASTM B 209-69 Aluminum Alloy Sheet and Plate.....	178.340; 179.100; 179.200; 179.220.
ASTM B 210-70 Aluminum Alloy Drawn Stainless Tables (FR B210-68(7B))	179.12.
ASTM B 221-76 Aluminum Alloy Extruded Bars, Rods, Shapes and Tubes.....	179.12.
ASTM B 241-69 Standard Specification for Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube.....	179.12.
ASTM B 557-81 Tension Testing Wrought and Cast Aluminum and Magnesium-Alloy Products, 1979	178.251.
ASTM B 580-79 Standard Specification for Anodic Oxide Coatings on Aluminum, 1979.....	173.316; 173.318.
ASTM C 148-77 Standard Methods of Polariscopic examination of Glass Containers, 1977	178.17.
ASTM D 56-79 Standard Method of Test for Flash Point by Tag Closed Tester	173.120.
ASTM D 88-56 (Reapproved 80) Standard Method for Test of Saybolt Viscosity	173.120.
ASTM D 93-80 Standard Method of Test for Flash Point by Pensky Martens Closed Tester.....	173.120.
ASTM D 323-58, 68 Vapor Pressure of Petroleum Products (Reid Methods)	173.119; 173.300.
ASTM D 1838-64 Copper Strip Corrosion by Liquefied Petroleum (LP) Gases.....	173.315.
ASTM D 2161-79 Conversion of Kinematic Viscosity to Saybolt Universal Viscosity or to Saybolt Furfu Viscosity.....	173.120.
ASTM D 3243-73T Flash Point of Aviation Turbine Fuels by Setaflash Closed Tester.....	173.120.
ASTM D 3278-78 Flash Point of Liquids by Setaflash Closed Tester	173.120.
ASTM E 8-69 Tension Testing of Metallic Materials	178.45.
ASTM E 8-81 Tension Testing of Metallic Materials.....	178.36; 178.37; 178.38; 178.39; 178.40; 178.41; 178.43; 178.44; 178.48; 178.49; 178.50; 178.51; 178.52; 178.53; 178.54; 178.55; 178.56; 178.57; 178.58; 178.59; 178.60; 178.61; 178.68; 178.251; 178.57; 179.400.
	Part 178, App. A.
ASTM E 23-60 Notched Bar Impact Testing of Metallic Materials.....	173.21.
ASTM E 112-63 Estimating the Average Grain Size of Metals.....	173.115.
ASTM E 290-77 Semi-Guided Bend Test for Ductility of Metallic Materials	172.407; 172.519.
ASTM E 487-74 Constant Temperature Stability of Chemical Materials	
ASTM E 681-79 Standard Test Method for Limits of Flammability of Chemicals	
ASTM G 26-70 Standard Recommended Practice for Operating Light-and-Water Exposure Apparatus (Xenon-Arc-Type) for Exposure of Nonmetallic Materials, 1970.	
• Association of American Railroads, 59 East Van Buren Street, Chicago, IL 60605:	
AAR Catalog Nos. F70BHT; F71BHT; F72BHT; F73BHT; F79BHT	179.14.
AAR Catalog Nos. SE60CHT; SE60CHTE; SE70CHT; SE70CHTE	179.14.
AAR Catalog Nos. F70CHT; F70CHTE; F73AHT; F73AHTE; F79CHT; F79CHTE	179.14.
AAR Catalog Nos. SE67BTH; SE67BTHE; SE68BTH; SE68BTHE; SF79CHT; SF79CHTE	179.14.
AAR Catalog Nos. SE60CHT; SE60CHTE; SE67BHT; SE67BTHE; SE68BHT; SE68BTHE	179.50.
AAR Catalog Nos. SE70CHT; SE70CHTE; SE79CHT; SE70CHTE	179.105.
AAR Specification for Design Fabrication and Construction of Freight Cars; September 1, 1964	179.100.
PAR Specification for Tank Cars, Specification M-1002, 1981.....	173.31.
/ AR Specification for Tank Cars, September 1985, Exclusive of (1) pp. 28-80, AAR, Part 179, changes to DOT regulations proposed by AAR Committee of Tank Cars, and (2) DOT Regulations in Effect, October 1985.	179.6; 179.12; 179.100; 179.101; 179.102; 179.103; 179.105; 179.200; 179.201; 179.220; 179.300; 179.400.

Source and name of material	49 CFR reference
American Water Works Association, 1010 Vermont Avenue NW., Suite 810, Washington, DC 20005: AWWA Standard C207-55, Steel Pipe Flanges, 1955.....	173.360.
Bureau of Explosives, 1920 L Street NW., Washington, DC 20036: Closed Drum Apparatus (Test)	173.300.
Impact Apparatus (Test), January 24, 1961	173.53; 173.64; 173.65; 173.114.
Open Drum Apparatus (Test)	173.300.
Fetterley's Formula (The Determination of the Relief Dimensions for Safety Valves on Containers in which Liquefied gas is charged and when the exterior surface of the container is exposed to a temperature of 1,200 °F.).....	173.315.
Flame Projection Test, 1958.....	173.300.
Pamphlet No. 6, Illustrating Methods for Loading and Bracing Carload and Less Than Carload Shipments of Explosives and Other Dangerous Articles, 1962.....	174.101; 174.290; 174.112; 174.115.
Pamphlets 6A (includes Appendix No. 1, October 1944 and Appendix 2, December 1945), Illustrating Methods for Loading and Bracing Carload and Less Than Carload Shipments of Loaded Projectiles, Loaded Bombs, etc., 1943.....	174.101; 174.290.
Pamphlet 6C, Illustrating Methods for Loading and Bracing Trailers and Less-Than-Trailer Shipments of Explosives and Other Dangerous Articles Via Trailer-on-Flatcar(TOFC) or Container-on-Flatcar (COFC), September 1968.....	174.55; 174.63; 174.101; 174.112; 174.115.
Pamphlets 1 & 2, Emergency Handling of Hazardous Materials in Surface Transportation; June 1973.....	177.861.
Canadian Transport Commission, 275 Slater Street, Ottawa, Ontario K1A 0N9; Canadian Transport Commission Regulations; 1974.....	171.12a; 172.401; 172.502; 174.11.
Chlorine Institute, Inc., 342 Madison Avenue, New York, NY 10017: Type 1½ JQ 225, Dwg. H5-1970, October 7, 1968; or Type 1½ JQ 225, Dwg. H50155, Revision A, April 28, 1969.....	173.315.
Standards for Angle Valves, and Dwg. 104-4, May 5, 1958 or Dwg. 104-5, September 1, 1972.....	173.33.
Standards for Excess Flow Valves, Dwg. 101-4, and 106-3, May 16, 1969, Dwg. 101-6, and 106-5, September 1, 1973.....	173.33.
Standards for Housing and Manway covers for Steel Cargo Tanks Manufactured on or before December 31, 1974, Dwg. 177-1, November 7, 1962 or Dwg. 173-2, September 11, 1971; Tanks manufactured after January 1, 1975, Dwg. 137-2, (9/1/71)......	173.337.
Compressed Gas Association, Inc., 1235 Jefferson Davis Highway, Arlington, VA 22202: CGA Pamphlet C-3, Standards for Welding and Brazing on Thin Walled Containers, 1975.....	178.47; 178.51; 178.54; 178.56; 178.57; 178.58; 178.60; 178.61; 178.68. 173.31; 173.34; 173.126. 172.400.
CGA Pamphlet C-6, Standards for Visual Inspection of Compressed Gas Cylinders, 1975.....	173.34.
CGA Pamphlet C-7, A Guide for the Preparation of Precautionary Markings for Compressed Gas Containers, Appendix A, May 15, 1972, and Addenda January 1976.....	173.34; 173.303.
CGA Pamphlet C-8, Standard for Requalification of DOT-3HT Cylinder Design, 1979.....	173.34.
CGA Pamphlet C-12, Qualification Procedure for Acetylene Cylinder Design, 1979.....	173.34.
CGA Pamphlet C-14, Procedures for Fire Testing of DOT Cylinder Pressure Relief Device Systems, 1979.....	173.315.
CGA Pamphlet G-2.2, Tentative Standard Method for Determining Minimum of 0.2% Water in Anhydrous Ammonia, 1975.....	178.338.
CGA Pamphlet G-4.1, Cleaning Equipment for Oxygen Service, 1977.....	173.34.
CGA Pamphlet S-1.1, Pressure Relief Device Standards Part 1—Cylinders for Compressed Gasses, 1979.....	173.315; 173.318.
CGA Pamphlets S-1.2, Safety Relief Device Standards Part 2—and Portable Tanks for Compressed Gasses, 1980.....	173.33.
CGA Technical Bulletin TB-2, Guidelines for Inspection and Repair of MC-330 and MC-331 Cargo Tanks, 1975.....	173.86.
Department of Defense (DOD), 2461 Eisenhower Avenue, Alexandria, VA: DOD TB 700-2, Explosives Hazard Classification Procedures.....	178.356.
Department of Energy (USDOE), 1000 Independence Avenue SW., Washington, DC 20545: USDOE publications available from: Superintendent of Documents Government Printing Office (GPO) or The National Technical Information Service (NTIS) USDC, USDOE Materials and Equipment Specification No. SP, Revision 1 and Supplement Fire Resistant Phenolic Foam.....	173.417; 178.356; 178.358.
USAEC, ORO 651—Uranium Hexafluoride Handling Procedures and Container Criteria, Revision 3, 1972.....	172.203.
Department of Health and Human Services (DHHS), Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health (NIOSH), Cincinnati, Ohio 45226: NIOSH Registry—of Toxic Effects of Chemical Substances, 1978 (Available from the Superintendent of Documents (GPO)).S.	177.825.
Department of Transportation (USDOT), 400 Seventh St., SW., Washington, DC 20590: Guidelines for Selecting Preferred Highway Routes for Highway Route Controlled Quantity Shipments of Radioactive Materials [51 FR 5968 February 18, 1986] Effective March 20, 1986, HMT-166T.....	174.510.
Fertilizer Institute, 1015 18th Street, Washington, DC 10036: Definitions and Test Procedures for Ammonium Nitrate Fertilizer (Revised May 7, 1971) January 16, 1973.....	173.304; 173.302.
General Services Administration, Specification Office, Rm. 6662, 7th and D Street SW., Washington, DC 20407: Federal Specification RR-C-901b, General 1-3.....	

Source and name of material	49 CFR reference
<i>Institute of Makers of Explosives</i> , 420 Lexington Avenue, New York, NY 10017; IME Safety Library Publication No. 22 (IME Standard 22), Recommendation for the Safe Transportation of Detonators in a Vehicle with Certain Other Explosive Materials, January 1, 1985	177.835.
<i>International Atomic Energy Agency (IAEA)</i> , Wagramerstrasse 5, P.O. Box 100, A-1400, Vienna, Austria: Also available from: Unipub Incorporated, P.O. Box 433, New York, NY 10016: IAEA, Regulations for the Safe Transport of Radioactive Materials, Safety Series No. 6, 1973, Revised Edition (as amended).	171.12; 173.417.
International Civil Aviation Organization (ICAO), P.O. Box 400, Place de l'Aviation Internationale, 1000 Sherbrooke Street West, Montreal, Quebec, Canada H3A 2R2: ICAO Technical Instructions available from: INTEREG, International Regulations, Publishing and Distribution Organization, P.O. Box 60105, Chicago, IL 60660: Technical Instructions for the Safe Transport of Dangerous Goods by Air, Doc 9284-AN/905 (1986) [50 FR 49394, December 2, 1985].	171.11; 172.401.
International Maritime Organization (IMO), 4 Albert Embankment, London, SE17SR, United Kingdom or New York Nautical Instrument & Service Corporation, 140 W. Broadway, New York, NY 10013: International Maritime Dangerous Goods Codes, Volumes I, II, III, IV, 1977, and Amendments 14-76, 15-77, and 16-78, 17-79, 19-80, 20-82, 21-83 and 22-84 thereto.	171.12; 172.102; 172.401; 172.407; 176.5; 176.11; 176.27; 176.30.
International Organization for Standardization, Case Postale 56, CH-1211, Geneva 20, Switzerland: Also available from: ANSI, 1430 Broadway, New York, NY 10018: ISO 82-197(e) Steel Tensile Testing, 1974 ISO-2431-72 ISO R780-1968	178.270-3. 173.121. 172.312.
National Association of Corrosion Engineers, 1440 South Creek, Houston, TX 77084: NACE Standard TM-01-69, Test Method Laboratory Corrosion Testing of Metals for the Process Industries, 1969.	173.500.
National Bureau of Standards, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22151: USDC, NBS Handbook H-28 (1957), 1957 Handbook of Screw-Thread Standards for Federal Services, Part II, December 1966 Edition.	178.45.
USDC, CAPE 1662, Civilian Applications Program Engineering Drawings (a package of information which include drawings and bills of material, describing insulated, protective overpacks).	178.356; 178.358.
National Fire Protection Association, Batterymarch Park, Quincy, MA 02269: NFPA Pamphlet No. 58—Standard for the Storage and Handling of Liquefied Petroleum Gasses, 1979.	173.315.
National Motor Freight Traffic Association, Inc., Agent, 1616 P Street, NW, Washington, DC 20036: National Motor Freight Classification NMF 100-1, 1982	177.841.
Nuclear Regulatory Commission, 1717 H Street NW, Washington, DC 20555: (USNRC) 10 CFR Part 71, Packaging of Radioactive Material for Transport and Transportation of Radioactive Materials Under Certain Conditions.	173.417.
Society of Plastics Industries, Inc., Organic Peroxide Producers Safety Division, 355 Lexington Avenue, New York, NY 10017: Self Accelerating Decomposition Temperature Test, 1972	173.21.
Transport Canada, TDG Canadian Government Publishing Center, Supply and Services, Canada, Ottawa K1A 0S9: Transport of Dangerous Goods Regulations, as of July 1, 1985, incorporating Registration Numbers SOR/85-77, SOR/85/585 and SOR/85-609.	171.12a; 172.401; 172.502.
Uniform Classification Committee, 222 South Riverside Plaza, Chicago, IL 60606: Uniform Freight Classification (UFC), Rule 40, Section 5 Uniform Freight Classification (UFC), Rule 41, Sections 2 and 3	173.620. 173.620.
United Nations, United Nations Sales Section, New York, NY 10017: UN Recommendations for the Transport of Dangerous Goods, Fourth Revised Edition (1986)	172.401; 172.407; 172.519.

* * * * *

3. In § 171.8, the following definitions and abbreviations would be added, revised, or deleted, as indicated, in appropriate alphabetical order:

§ 171.8 Definitions and abbreviations.

Add:

"Bag" means a flexible packaging made of paper, plastic film, textiles, woven material or other similar materials.

"Box" means a packaging with complete rectangular or polygonal faces, made of metal, wood, plywood, reconstituted wood, fiberboard, plastic, or other suitable material.

"Bulk packaging" means a packaging, including a transport vehicle—

(1) Having an internal volume greater than 450 liters (118.9 gallons) as a receptacle for a liquid,

(2) Having a capacity greater than 400 kilograms (881.8 pounds) as a receptacle for a solid; or

(3) Having a water capacity greater than 453.6 kilograms (1,000.0 pounds) as a receptacle for a gas.

"Class" means hazard class. See "hazard class".

"Class 1" See § 173.50.

"Class 2" See § 173.115.

"Class 3" See § 173.120.

"Class 4" See § 173.124.

"Class 5" See § 173.128.

"Class 6" See § 173.132.

"Class 7" See § 173.403.

"Class 8" See § 173.136.

"Class 9" See § 173.140.

"Closure" means a device which closes an opening in a receptacle.

"Combination packaging" means a combination of packagings consisting of one or more inner packagings secured in a non-bulk outer packaging. It does not include a composite packaging.

"Composite packaging" means a packaging consisting of an outer packaging and an inner receptacle, so constructed that the inner receptacle and the outer packaging form an integral packaging. Once assembled it remains thereafter an integrated single unit; it is filled, stored, shipped and emptied as such.

"Crate" means an outer packaging with incomplete surfaces.

"Domestic transportation" means transportation between places within the United States other than through a foreign country.

"Dangerous when wet material" See § 173.124.

"Division" means a subdivision of a hazard class.

"Drum" means a flat-ended or convex-ended cylindrical packaging made of metal, fiberboard, plastic, plywood, or other suitable materials. This definition also includes packagings of other shapes made of metal or plastic (e.g., round taper-necked packagings or pall-shaped packagings) but does not include cylinders, jerricans, wooden barrels or bulk packagings.

"Hazard class" means the category of hazard assigned to a hazardous material under the defining criteria of Part 173 of this subchapter and the provisions of the § 172.101 Table.

"Infectious substance" See § 173.134.

"Inner packaging" means a receptacle which requires an outer packaging in order to perform its containment function.

"Inner receptacle" means a receptacle which requires an outer packaging in order to perform its containment function.

"International transportation" means transportation —

(1) Between any place in the United States and any place in a foreign country;

(2) Between places in the United States through a foreign country; or

(3) Between places in one or more foreign countries through the United States.

"Jerrican" means a metal or plastic packaging of rectangular or polygonal cross-section.

"kg" means kilogram.

"kPa" means kilopascal.

"L" means liter.

"Manufacturer" means a person who applies to a packaging a DOT specification marking or a United Nations mark (see § 178.503).

"Maximum capacity" means the maximum inner volume of receptacles or packagings.

"Maximum net mass" means the maximum net mass of contents in a single packaging or, as used in Subpart M of Part 178, the maximum combined mass of inner packagings and the contents thereof.

"mL" means milliliter.

"Non-bulk packaging" means a packaging—

(1) Having an internal volume of 450 liters (118.9 gallons) or less as a receptacle for a liquid,

(2) Having a capacity of 400 kilograms (881.8 pounds) or less as a receptacle for a solid, or

(3) Having a water capacity of 453.6 kilograms (1000.0 pounds) or less as a receptacle for a gas.

"n.o.s. entry" means a shipping description from the § 172.101 Table which includes the abbreviation "n.o.s."

"Outer packaging" means the outermost enclosure of a composite or combination packaging together with any absorbent materials, cushioning and any other components necessary to contain and protect inner receptacles or inner packagings.

"Pa" means pascal.

"Packing group" means a grouping according to the degree of danger presented by hazardous materials. Packing Group I indicates great danger; Packing Group II, medium danger; Packing Group III, minor danger. See § 172.101(f).

"Poisonous materials" See § 173.132.

"Primary hazard" means the hazard class of a material, as assigned in the § 172.101 Table.

"Receptacle" means a containment vessel for receiving and holding materials, including any means of closing.

"Specification packaging" means a packaging conforming to one of the specifications or standards for packagings in Part 178 or Part 179 of this subchapter.

"Strong outer (or outside) packaging" means a packaging which meets or exceeds the performance requirements of § 173.24 of this subchapter applicable to non-specification packagings, either as a single packaging or as the outer packaging of a combination packaging.

"Subsidiary hazard" means a hazard of a material other than the primary hazard. See "primary hazard".

"Table in § 172.101" or "§ 172.101 Table" means the Hazardous Materials Table in § 172.101 of this subchapter.

"UN" means United Nations.

"UN standard packaging" means a specification packaging conforming to the requirements in Subparts L and M of Part 178.

"Wooden barrel" means a packaging made of natural wood, of round cross-section, having convex walls, consisting of staves and heads and fitted with hoops.

(Revise:)

"Bottle" means a receptacle having a neck of relatively smaller cross section than the body and an opening capable of holding a closure for retention of the contents.

"Cargo aircraft only" means an aircraft that is used to transport cargo

and is not engaged in carrying passengers. For purposes of this subchapter, the terms "cargo aircraft only", "cargo-only aircraft" and "cargo aircraft" have the same meaning.

"Combustible liquid" See § 173.120.

"Compressed gas" See § 173.115.

"Corrosive material" See § 173.136.

"Etiologic agent" See § 173.134.

"Flammable gas" See § 173.115

"Flammable liquid" See § 173.120.

"Flammable solid" See § 173.124.

"Flash point" means the minimum temperature at which a substance gives off flammable vapors which, in contact with sparks or flame, will ignite. (For criteria, see § 173.121.)

"Gross weight" or "Gross mass" means the weight of a packaging plus the weight of its contents.

"Limited quantity" when specified as such in a section applicable to a particular material, means the maximum amount of a hazardous material for which there is a specific labeling and packaging exception.

"Magnetic material" See § 173.21(d).

"Marking" means descriptive name, identification number, instructions, cautions, weight, specification, or UN marks, or combinations thereof, required by this subchapter on outer packagings of hazardous materials.

"Name of contents" means the proper shipping name as specified in § 172.101.

"Net weight", "Net mass", or "Net quantity" means the mass or volume of hazardous material contained in a package, excluding the weight or volume of any packaging material, except in the case of explosive devices where the net weight is the weight of the finished device excluding packagings. See also "maximum net mass".

"Organic peroxide" See § 173.128.

"ORM" means other regulated material. See § 173.144.

"Oxidizer" See § 173.128.

"Package" means the complete product of the packing operation, consisting of the packaging and its contents as prepared for transport. For radioactive materials, see § 173.403 of this subchapter.

"Packaging" means a receptacle and any other components or materials necessary for the receptacle to perform its containment function and to ensure compliance with the minimum packing requirements of this subchapter. For radioactive materials, see § 173.403 of this subchapter.

"Pyrophoric liquid" See § 173.124(b).

"Spontaneously combustible material" See § 173.124(b).

"Water reactive material" see "Dangerous when wet material, § 173.124(c)."

Remove:

NRC
Outside container
Poison A
Poison B
Pyrophoric solid
STC

4. The title and text of § 171.10 would be revised to read as follows:

§ 171.10 Hazardous materials in bulk on board vessels or barges.

Except for transportation in bulk packagings (as defined in § 171.8 of this part), the requirements of this subchapter do not apply to the bulk carriage of hazardous materials by vessel or barge. See 46 CFR Subchapters D, I, O and N for requirements applicable to bulk carriage by vessel or barge.

§ 171.11 [Amended]

5. In § 171.11, paragraphs (d)(4)(i) and (d)(4)(ii) would be removed, paragraphs (d)(4)(iii) and (d)(4)(iv) would be redesignated as (d)(4)(i) and (d)(4)(ii), respectively, and paragraph (c) would be revised to read as follows:

§ 171.11 Use of ICAO Technical Instructions.

(c) Is not a forbidden material or package according to § 173.21 or Column 3 of the § 172.101 Table and does not meet the definition for Division 2.3 (§ 173.115(c) of this subchapter) or Division 6.1, Packing Group I, for inhalation toxicity (§§ 173.132(a)(3) and 173.133(a) of this subchapter).

6. In § 171.12, paragraphs (c), (d) and (f) would be removed, paragraph (e) would be redesignated as paragraph (c) and paragraph (b) would be revised to read as follows:

§ 171.12 Import and export shipments.

(b) *IMDG Code.* The IMDG Code sets forth descriptions, classifications, packagings, labeling and vessel stowage requirements. Notwithstanding the provisions of this subchapter, a material which is packaged, marked, classed, labeled, placarded, described, stowed and segregated in accordance with the IMDG Code, and otherwise conforms to the requirements of this section, may be offered and accepted for transportation and transported within the United States. The following conditions and limitations apply:

(1) The provisions of this paragraph apply only to materials in international transportation or in domestic transportation, a portion of which involves transportation by vessel.

(2) Bulk packagings must conform to the requirements of this subchapter.

(3) A material may not be transported under the provisions of this paragraph if it is—

(i) A forbidden material or package according to § 173.21 or Column 3 of the § 172.101 Table;

(ii) A Class 1 explosive other than

Division 1.4;

(iii) A Division 2.3 material or Division 6.1, Packing Group 1, inhalation toxic material;

(iv) A Class 7 material.

(4) The provisions of this paragraph do not apply to materials designated as hazardous materials under this subchapter that are not subject to the requirements of the IMDG Code.

(5) A number of materials listed in the IMDG Code may not be subject to the requirements of this subchapter. The provisions of this subchapter do not apply to materials listed in the IMDG Code which are not designated as hazardous materials under this subchapter.

(6) When a hazardous material is also a hazardous waste as defined in this subchapter—

(i) The word "Waste" must precede the proper shipping name on shipping papers and packages; and

(ii) The requirements of § 172.205 with respect to hazardous waste manifests are applicable.

(7) When a hazardous material is also a hazardous substance as defined in this subchapter, the requirements of §§ 172.203(c) and 172.324 are applicable.

(8) When a hazardous material is poisonous, the requirements of § 172.203(k) are applicable.

§ 171.12a [Amended]

7. Section 171.12a would be amended as follows:

a. In paragraph (a) introductory text, the reference to "paragraph (b)" is changed to "paragraphs (b) and (g)";

b. In paragraph (d), the introductory phrase preceding the word "specification" is changed to read "Except as specified in paragraph (g) of this section and § 173.301(l) of this subchapter."

c. In paragraph (e) the reference to "paragraph a" is changed to read "paragraphs (a) and (g)".

d. In § 171.12a, the introductory text of paragraph (b)(2) would be revised and paragraph (g) would be added, as follows:

§ 171.12a Canadian shipments and packagings.

(b)

(2) A material or article meeting the definition for Class 1 (explosives) according to this subchapter, except that, notwithstanding the requirements of Part 172 of this subchapter—

(g) Tank cars used under the provisions of this section must conform to the following requirements:

(1) Each class CTC-105, 112, and 114 tank car shall be equipped with a coupler vertical restraint system in accordance with § 179.14 of this subchapter.

(2) After December 31, 1987, each tank car which does not conform to a DOT specification shall be equipped with a coupler vertical restraint system in accordance with § 179.14 of this subchapter.

§ 171.14 [Removed]

9. Section 171.14 would be removed.

PART 172—HAZARDOUS MATERIALS TABLE, SPECIAL PROVISIONS AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

10. The authority citation for Part 172 would continue to read as follows:

Authority: 49 U.S.C. 1803, 1804, 1805, 1808; 49 CFR Part 1, unless otherwise noted.

11. In Part 172, §§ 172.101 and 172.102 would be revised as follows:

Subpart B—Table of Hazardous Materials and Special Provisions**§ 172.101 Purpose and use of hazardous materials table.**

(a) The Hazardous Materials Table (Table) in this section designates the materials listed therein as hazardous materials for the purpose of transportation of those materials. For each listed material, the Table identifies the hazard class or specifies that the material is forbidden in transportation, and gives the proper shipping name or directs the user to the preferred proper shipping name. In addition, the Table specifies or references requirements in this subchapter pertaining to labeling, packaging, quantity limits aboard aircraft and stowage of hazardous materials aboard vessels.

(b) *Column 1: Symbols.* Column 1 of the Table contains five symbols ("+", "A", "D", "I", and "W"), as follows:

(1) The plus (+) fixes the proper shipping name and the hazard class for that entry without regard to whether the material meets the definition of that class. An alternate proper shipping name and hazard class may be authorized by the Director, OHMT.

(2) The letter "A" restricts the application of requirements of this

subchapter to materials offered or intended for transportation by aircraft, unless the material is a hazardous substance or a hazardous waste.

(3) The letter "D" identifies proper shipping names which are appropriate for describing materials for domestic transportation but may be inappropriate for international transportation under the provisions of international regulations (e.g., IMO, ICAO). Except for hazardous substances or hazardous wastes classed as ORM-E materials, an alternate proper shipping name may be selected when international transportation is involved.

(4) [Reserved]

(5) The letter "I" identifies proper shipping names which are appropriate for describing materials in international transportation. An alternate proper shipping name may be selected when only domestic transportation is involved.

(6) The letter "W" restricts the application of requirements of this subchapter to materials offered or intended for transportation by vessel, unless the material is a hazardous substance or a hazardous waste.

(c) *Column 2: Hazardous materials descriptions and proper shipping names.* Column 2 lists the hazardous materials descriptions and proper shipping names of materials designated as hazardous materials. Modification of a proper shipping name may otherwise be required or authorized by this section. Proper shipping names are limited to those shown in Roman type (not italics).

(1) Proper shipping names may be used in the singular or plural and in either capital or lower case letters.

(2) Punctuation marks and words in italics are not part of the proper shipping name but may be used in addition to the proper shipping name. The word "or" in italics indicates that any terms in the sequence may be used as the proper shipping name as appropriate.

(3) The abbreviation "n.o.i." or "n.o.i.b.n." may be used interchangeably with "n.o.s."

(4) Except for hazardous wastes, when qualifying words are used as part of the proper shipping name, their sequence in the package markings and shipping paper description is optional. However, the entry in the Table reflects the preferred sequence.

(5) Except for a material classed as an organic peroxide, when one entry references another entry by use of the word "see", if both names are in roman type, either name may be used as the proper shipping name (e.g., Ethyl alcohol. See Ethanol). However, the referenced entry is preferred. For a

material classed as an organic peroxide, the technical name shall be used as the proper shipping name. An organic peroxide formulation that is not listed by its technical name, shall be described as "organic peroxide, mixture", "Organic peroxide, sample, n.o.s.", or "organic peroxide, trial quantities, n.o.s.", as appropriate.

(6) When a proper shipping name includes a concentration range as part of the shipping description, the actual concentration, if it is within the range stated, may be used in place of the concentration range. For example, an aqueous solution of hydrogen peroxide containing 30 percent peroxide may be described as "Hydrogen peroxide, aqueous solution with not less than 20 percent but not more than 40 percent hydrogen peroxide" or "Hydrogen peroxide, aqueous solution with 30 percent hydrogen peroxide".

(7) Use of the prefix "mono" is optional in any shipping name when appropriate. Thus, Iodine monochloride may be used interchangeably with Iodine chloride. In "Glycerol alpha-monochlorhydrin" the term "mono" is considered a prefix to the term "chlorhydrin" and may be deleted.

(8) *Hazardous substances.* The Appendix to this section lists materials which are listed or designated as hazardous substances under section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Proper shipping names for hazardous substances (see the appendix to this section and § 171.8 of this subchapter) shall be determined as follows:

(i) If the hazardous substance appears in the Table by technical name, then the technical name is the proper shipping name.

(ii) If the hazardous substance does not appear in the Table and is not a forbidden material, then an appropriate generic shipping name shall be selected corresponding to the hazard class of the material as determined by the defining criteria of this subchapter (see §§ 173.2 and 173.2a of this subchapter). For example, a hazardous substance which is listed in the appendix but not in the Table and which meets the definition of a flammable liquid might be described as "Flammable liquid, n.o.s." or other appropriate shipping name corresponding to the flammable liquid hazard class.

(9) If the word "waste" is not included in the hazardous material description in Column 2 of the table, the proper shipping name for a hazardous waste (as defined in § 171.8 of this subchapter) shall include the word "Waste"

preceding the proper shipping name of the material. For example: Waste acetone.

(10) *Mixtures and solutions.* (i) A mixture or solution comprised of a hazardous material identified in the Table by technical name and non-hazardous material shall be described using the proper shipping name of the hazardous material and the qualifying word "mixture" or "solution", as appropriate, unless—

(A) The packaging specified in Column 8 is inappropriate to the physical state of the material;

(B) The shipping description indicates that the proper shipping name applies only to the pure or technically pure hazardous material;

(C) The hazard class or packing group of the mixture or solution is different from that specified for the entry; or

(D) There is a significant change in the measures to be taken in emergencies.

(ii) If one or more of the conditions specified in paragraphs (i)(A), (i)(B), (i)(C), and (i)(D) of paragraph (c)(10) of this section are satisfied, then a proper shipping name shall be selected as prescribed in paragraph (c)(12)(ii) of this section.

(11) Except for a material subject to or prohibited by § 173.21, 173.51, 173.86(d), 173.86(e)(1) or 173.114a(g)(2) of this subchapter, a material for which the hazard class is uncertain and must be determined by testing or a material that is a hazardous waste may be assigned a tentative shipping name, hazard class and identification number, based on the shipper's tentative determination according to—

(i) Defining criteria in this subchapter;

(ii) The hazard precedence prescribed in § 173.2a of this subchapter; and

(iii) The shipper's knowledge of the material.

(12) Except when the proper shipping name in the Table is preceded by a plus (+)—

(i) If it is specifically determined that a material meets the definition of a hazard class other than the class shown in association with the proper shipping name, the material shall be described by an appropriate proper shipping name listed in association with the correct class for the material.

(ii) If an appropriate technical name is not shown in the Table, selection of a proper shipping name shall be made from the generic descriptions or "n.o.s." entries corresponding to the specific hazard class and packing group of the material. The name that most appropriately describes the material shall be used; e.g., an alcohol not listed by its technical name in the Table shall

be described as "Alcohol, n.o.s." rather than "Flammable liquid, n.o.s.". Some mixtures may be more appropriately described according to their application, such as "Coating solution" or "Extracts, flavoring, liquid", rather than by an "n.o.s." entry, such as "Flammable liquid, n.o.s." It should be noted, however, that an n.o.s. entry as a proper shipping name may not provide sufficient information for shipping papers and package markings. Under the provisions of Subparts C and D of this part, the technical name of the constituent which makes the product a hazardous material may be required in association with the proper shipping name.

(iii) If a material meets the definition of more than one hazard class, and is not identified in the Table by a specific description or a dual hazard "n.o.s." entry (e.g., "Flammable liquid, corrosive, n.o.s."), the hazard class of the material shall be determined by using the precedence specified in § 173.2a of this subchapter, and an appropriate shipping description shall be selected as described in paragraph (c)(12)(ii) of this section.

(iv) If it is specifically determined that a material is not a forbidden material and does not meet the definition of any hazard class, the material is not a hazardous material.

(13) When the proper shipping name in the Table is preceded by the letter "D", the hazardous material may be described by an "n.o.s." entry or generic proper shipping name in place of the more specific technical name. However, the technical name of the hazardous material shall be entered in association with the proper shipping name, when appropriate, as for a hazardous substance.

(d) *Column 3: Hazard class.* Column 3 contains a designation of the hazard class or division corresponding to each proper shipping name, or the word "Forbidden".

(1) A material for which the entry in this column is "Forbidden" may not be offered for transportation or transported. This prohibition does not apply if the material is diluted, stabilized or incorporated in a device and it is classed in accordance with the definitions of hazardous materials contained in Part 173 of this subchapter.

(2) When a reevaluation of test data or new data indicates a need to modify the "Forbidden" designation or the hazard class or packing group specified for a material specifically identified in the table, this data should be submitted to the Director, OHMT.

(3) A basic description of each hazard class and the section reference for class

definitions appear in § 173.2 of this subchapter.

(e) *Column 4: Identification number.* Column 4 lists the identification number assigned to each proper shipping name. Those preceded by the letters "UN" are associated with proper shipping names considered appropriate for international transportation as well as domestic transportation. Those preceded by the letters "NA" are associated with proper shipping names not recognized for international transportation, except to and from Canada. Identification numbers in the "NA9000" series are associated with proper shipping names not appropriately covered by international hazardous materials (dangerous goods) transportation standards, or not appropriately addressed by international transportation standards for emergency response information purposes, except for transportation between the United States and Canada.

(f) *Column 5: Packing group.* Column 5 specifies the packing group(s) assignment for a material conforming to the associated hazard class and proper shipping name. Classes 1 and 7 and Divisions 2.1 and 2.2 of Class 2 do not have packing groups. Packing groups I, II and III indicate the degree of danger presented by the material is either great, medium or minor, respectively. If more than one packing group is indicated for an entry, the packing group for the hazardous material is determined using the criteria for assignment of packing groups specified in Subpart D of Part 173. When a reevaluation of test data or new data indicates a need to modify the specified packing group(s), the data should be submitted to the Director, OHMT.

(g) *Column 6: Labels.* Column 6 specifies the hazard warning label(s) required for a package filled with a material conforming to the associated hazard class and proper shipping name, unless the package is otherwise excepted from labeling by provisions in Subpart D of Part 172, or Part 173 of this subchapter. The first label shown for each entry is indicative of the primary hazard of the material, additional labels are indicative of subsidiary hazards. Provisions in § 172.402 may require that a label other than that specified in Column 6 be affixed to the package in addition to that specified in Column 6.

(h) *Column 7: Special provisions.* Column 7 specifies codes for special provisions applicable to hazardous materials. When Column 7 refers to a special provision for a hazardous material, the meaning and requirements of that special provision are as set forth in § 172.102.

(i) *Column 8: Packaging authorizations.* Columns 8a, 8b and 8c specify the applicable sections for exceptions, non-bulk packaging requirements and bulk packaging requirements, respectively, in Part 173 of this subchapter. Columns 8a, 8b and 8c are completed in a manner which indicates that "§ 173." precedes the designated numerical entry. For example, the entry "202" in column 8b associated with the proper shipping name "Gasoline" indicates that for this material conformance to non-bulk packaging requirements prescribed in § 173.202 of this subchapter is required. When packaging requirements are specified, they are in addition to the standard requirements for all packagings prescribed in § 173.24 of this subchapter and any other applicable requirements in Subparts A and B of Part 173 of this subchapter.

(1) *Exceptions.* Column 8a contains exceptions from some of the requirements of this subchapter. The referenced exceptions are in addition to those specified in Subpart A of Part 173 and elsewhere in this subchapter. A "None" in this column means no packaging exceptions are authorized, except as may be provided by special provisions in Column 7.

(2) *Non-bulk packaging.* Column 8b references the section in Part 173 of this subchapter which prescribes packaging requirements for non-bulk packagings. A "None" in this column means non-bulk packagings are not authorized, except as may be provided by special provisions in Column 7. Each reference in this column to a material which is a hazardous waste or a hazardous substance, and whose proper shipping name is preceded in Column 1 of the Table by the letter "A" or "W", is modified to include "§ 173.204" on those occasions when the material is offered for transportation or transported by a mode in which its transportation is not otherwise subject to requirements of this subchapter.

(3) *Bulk packaging.* Column 8c specifies the section in Part 173 of this subchapter which prescribes packaging requirements for bulk packagings other than IM portable tanks. A "None" in this column means bulk packagings are not authorized, except as may be provided by special provisions in Column 7. Authorizations for use of IM portable tanks are set forth in Column 7.

(j) *Column 9: Quantity limitations.* Columns 9a and 9b specify the maximum quantities that may be offered for transportation in one package by passenger-carrying aircraft or rail car

(Column 9a) or by cargo aircraft only (Column 9b), subject to the following:

(1) "Forbidden" means the material may not be offered for transportation or transported in the applicable mode of transport.

(2) The quantity limitation is "net" except where otherwise specified, such as for "Consumer commodity" which specifies "65 lbs. gross."

(3) When articles or devices are specifically listed by name, the net quantity limitation applies to the entire article or device (less packaging and packaging materials) rather than only to its hazardous components.

(4) A package offered or intended for transportation by aircraft and which is filled with a material forbidden on passenger-carrying aircraft but permitted on cargo aircraft only, or which exceeds the maximum net quantity authorized on passenger-carrying aircraft, shall be labeled with the CARGO AIRCRAFT ONLY label specified in § 172.448 of this part.

(k) *Column 10: Vessel stowage requirements.* Columns 10a (Cargo vessel) and 10b (Passenger vessel) specify the authorized stowage locations on board vessels. Column 10c (Other stowage provisions) specifies codes for stowage requirements for specific hazardous materials. The meaning of

each code in Column 10c is set forth in § 176.84 of this subchapter. Section 176.63 of this subchapter sets forth the physical requirements for each of the authorized locations listed in columns 10a and 10b. (For bulk transportation by vessel, see 46 CFR Parts 30 to 40, 70, 98, 148, 151, 153 and 154.) The authorized stowage locations specified in Columns 10a and 10b are defined as follows:

(1) "1" means the material shall be stowed "on deck."

(2) "2" means the material must be stowed "under deck."

(3) "3" means the material must be stowed "under deck away from heat."

(4) "1,2" means the material may be stowed "on deck" or "under deck." However, "under deck" stowage should be used, if available.

(5) "1,3" means the material may be stowed "on deck" or "under deck away from heat." However, "under deck away from heat" stowage should be used, if available.

(6) "4" means the material may be transported on a passenger vessel in only the quantity specified in column 9a of the Table, and is subject to the stowage requirements specified for a cargo vessel for the same material.

(7) "5" means the material is forbidden and may not be offered for transportation or transported by vessel.

(8) "6" means the material shall be transported in a magazine subject to the requirements of §§ 176.135 through 176.144 of this subchapter.

(i) *Changes to the Table.* (1) Unless specifically stated otherwise in the amendment or the "Effective date" entry in its preamble, if any entry in this Table is changed by an amendment to this subchapter—

(i) Such a change does not apply to the shipment of any package filled prior to the effective date of the amendment; and

(ii) Stocks of preprinted shipping papers and package markings may be continued in use, in the manner previously authorized, until depleted or for a one-year period, subsequent to the effective date of the amendment, whichever is less.

(2) A shipping description or any associated entry which is listed in the § 172.101 Table may be altered, if the alteration is approved by the Director, OHMT.

(3) A shipping description or any associated entry which is listed in the current edition of the IMDG Code but is not listed in the § 172.101 Table may be used as if it were listed in the Tab^{le}, if approved by the Director, OHMT.

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica-tion numbers	Pack- ing group	Labels	Special provisions	(8) Packaging authorizations (§173.103...)		(9) Quantity limitations		(10) Vessel stowage requirements	
							(6)	(7)	(8A)	(8B)	(9A)	(9B)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(8B)	(8C)	(9A)	(9B)	(10A)
D	Accumulators, electric, see Batteries, wet etc. Accumulators, pressurized, pneumatic or hydraulic (containing non-flammable gas). Acetal..... Acetaldehyde	2.2 3 3 3	NA1956 UN1088 UN1089 UN1841 UN2332 UN2789	NONFLAMMABLE GAS. II FLAMMABLE LIQUID. I FLAMMABLE LIQUID.	..... T7..... B16, N1, N15, T20, T26, T28.	306 150 None 150 150 154	306 202 242 201 202 202	None 5 L..... Forbidden	No limit..... 60 L..... 30 L.....	No limit..... 1,2..... 1,3..... 1,3..... 200 kg..... 200 kg.....	1,2..... 5..... 5..... 1,2..... 1,2..... 1,2.....	1,2..... 1,2..... 1,2..... 1,2..... 1,2..... 34
A	Acetaldehyde ammonia..... Acetaldehyde oxime..... Acetic acid, glacial or Acetic acid solution, more than 80 per cent acid, by weight. Acetic acid solution, more than 10 per cent but not more than 80 per cent acid, by weight. Acetic anhydride..... Acetone..... Acetone cyanohydrin..... Acetone oils.....	8 8 8 8 8 3 6.1 3	UN2790 UN2790 UN2790 UN2790 UN2790 UN1715 UN1090 UN1541 UN1091	II CORROSIVE..... II CORROSIVE..... II CORROSIVE..... II CORROSIVE..... II CORROSIVE..... II FLAMMABLE LIQUID. II FLAMMABLE LIQUID. II FLAMMABLE LIQUID.	B2, N1, N11, N26, N35, T8. B2, N1, N11, N26, N35, T8. B14, B32, N1, N16, N34, 10, T8. T7, T30.....	242 242 242 242 242 202 150 None	242 242 242 242 242 202 150 227	1 L..... 1 L..... 1 L..... 1 L..... 1 L..... 1 L..... 5 L..... 244	30 L..... 30 L..... 30 L..... 30 L..... 30 L..... 30 L..... 60 L..... Forbidden	1,2..... 1,2..... 1,2..... 1,2..... 1,2..... 1,3..... 1,3..... 1,3.....	1,2..... 1,2..... 1,2..... 1,2..... 1,2..... 1,3..... 1,3..... 1,3.....	21 34 34 34 34 21 21 21
	Acetonitrile, see Methyl cyanide. Acetyl acetone peroxide (3,5-Dimethyl-3,5-dihydroxydioxolane-1,2), not more than 40 per cent in solution and not more than 8% by weight active oxygen. Acetyl acetone peroxide (3,5-dimethyl-3,5-dihydroxydioxolane-1,2), not more than 22% as a paste with not less than 44% solvent, not less than 9% water and not less than 11% inert solid.	5.2 5.2	UN2080 UN3061	II ORGANIC PEROXIDE. II ORGANIC PEROXIDE.	..... .....	152 None	225 None	5 L..... 60 L.....	10 L..... 10 L.....	1..... 1.....	5..... 5.....	12, 40 2

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Pack- ing group	Labels	Special provisions	Quantity limitations		Vessel stowage requirements		
							(5)	(6)	(7)	(8A)	(8B)
(1)	<i>Acetyl acetone peroxide with more than 9% by weight active oxygen.</i> Acetyl benzoyl peroxide, not more than 45 per cent in solution. <i>Acetyl benzoyl Peroxide, solid, or more than 40% in solution.</i> Acetyl bromide.....	Forbid- den.....	5.2 UN2081	II ORGANIC PEROXIDE.	None.....	None 225	None 5 L.....	10 L.....	1.....	5	12, 40
	Acetyl chloride.....	Forbid- den.....	8 UN1716	II CORROSIVE.....	B2, T12, T28.	154	242 1 L.....	30 L.....	1.....	1	80, 40
	Acetyl chloroformate.....	Forbid- den.....	3 UN1717	II FLAMMABLE LIQUID,	N1 N11, N16, N26, N34, T18, T26.	None 202	243 1 L.....	5 L.....	1.3	1	40
	<i>Acetyl cyclohexanesulfonyl peroxide, more than 82 per cent wetted with less than 12 per cent water.</i> Acetyl cyclohexanesulfonyl peroxide, not more than 32 per cent in solution. <i>Acetyl cyclohexanesulfonyl peroxide, not more than 82 per cent, wetted with not less than 12 per cent water.</i> Acetylene, dissolved.....	Forbid- den.....	5.2 UN2083	II ORGANIC PEROXIDE.	None.....	None 225	None Forbid- den.....	Forbid- den.....	1	5	2, 40
	Acetylene silver nitrate.....	Forbid- den.....	5.2 UN2082	I ORGANIC PEROXIDE.	None.....	None 225	None Forbid- den.....	Forbid- den.....	1	5	2, 40
	Acetylene tetra bromide, see Tetra- bromethane.	Forbid- den.....	2.1 UN1001	FLAMMABLE GAS.	None.....	None 303	None Forbid- den	15 kg	1	1	25, 40, 57, 93
D	Acetyl peroxide, see Diacetyl peroxide, etc.... Acetyl butyl phosphate, see Butyl acid phosphate.	Acetyl methyl carbinal.....	8 UN1898	II CORROSIVE.....	B2, T9.....	154	242 1 L.....	30 L.....	1	1	8, 40
	Acid, liquid, n.o.s.....	Acid, sludge, see Sludge acid.....	8 JA1760	II CORROSIVE.....	B2.....	154	242 1 L.....	5 L.....	1.2	1	34
	Acridine.....	Acrolein dimer, stabilized.....	6.1 UN2713	II KEEP AWAY FROM FOOD.	T1	153	213	240	100 kg.....	1.2	1
	Acrolein, inhibited.....	Acrolein, inhibited.....	3 UN2607	II FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	220 L.....	1.3
	Acrylamide.....	Acrylamide.....	3 UN1092	I FLAMMABLE LIQUID, POISON.	10, B12, B14, B30, B42, B43.	None 226	244	Forbid- den	1.3	5	12, 40
			6.1 UN2074	II KEEP AWAY FROM FOOD.	T8	153	213	240	100 kg.....	1.2	12, 25, 34

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Tables	Special provisions	Packing authorization (D.O.T. 173)	Quantity limitations		Other storage provisions (10C)	
									(8A)	(8B)	(10A)	
	Alcohols, toxic, n.o.s.	3	UN1986	II	FLAMMABLE LIQUID, POISON.		None	202	243	1 L.....	60 L.....	12, 40
	Aldehydes, n.o.s.	3	UN1989	I	FLAMMABLE LIQUID.	T8, T31	None	201	243	1 L.....	30 L.....	12
				II	FLAMMABLE LIQUID.	T6, T31	150	202	242	5 L.....	60 L.....	12
				III	FLAMMABLE LIQUID.	T7, T30	150	203	242	60 L.....	220 L.....	12
	Aldehydes, toxic, n.o.s.	3	UN1988	II	FLAMMABLE LIQUID, POISON.	T8	None	202	243	1 L.....	60 L.....	12, 40
	Aldol...	6.1	UN2839	II	POISON, POISON.	T8	None	202	243	5 L.....	60 L.....	12, 25, 95
D	Aldrin, liquid.	6.1	NA2762	II	POISON, POISON.	A2, N1, N15, N34,	None	202	243	5 L.....	60 L.....	12, 95
D	Aldrin, solid.	6.1	NA2761	II	POISON, POISON.	A2, N1, N15, N34,	None	212	242	25 kg.....	100 kg.....	12, 95
D	Alkali metal alloys, liquid	4.3	UN1421	I	DANGEROUS WHEN WET.	A2, N1, N15, N34,	None	201	244	Forbidden	1 L.....	5
	Alkali metal amalgams, n.o.s., liquid	4.3	UN1389	I	DANGEROUS WHEN WET.	A2, N1, N15, N34,	None	201	244	Forbidden	1 L.....	12, 25, 95
	Alkali metal amalgams, n.o.s., solid	4.3	UN1389	I	DANGEROUS WHEN WET.	A2, N1, N15, N34,	None	211	242	Forbidden	15 kg.....	12, 25, 95
	Alkali metal amides, n.o.s.	4.3	UN1390	II	DANGEROUS WHEN WET.	A19, A20, N2, N11, N26,	None	212	241	15 kg.....	50 kg.....	12, 25, 95
	Alkali metal dispersions, n.o.s. or Alkali earth metal dispersions, n.o.s.	4.3	UN1391	I	DANGEROUS WHEN WET.	A2, N1, N15, N34,	None	201	244	Forbidden	1 L.....	5
	Alkaline corrosive liquids, n.o.s., see Caus-tic alkali liquids, n.o.s.											
	Alkaline earth metal alloys, n.o.s.	4.3	UN1393	II	DANGEROUS WHEN WET.	A19	None	212	241	15 kg.....	50 kg.....	12, 25, 95
	Alkaline earth metal amalgams, n.o.s.	4.3	UN1392	I	DANGEROUS WHEN WET.	A19, N34	None	211	242	Forbidden	15 kg.....	12, 25, 95
	Alkaloids, n.o.s., or Alkaloid salts, n.o.s., poisonous liquid.	6.1	UN1544	I	POISON.	POISON, KEEP AWAY FROM FOOD.	None	202	243	1 L.....	30 L.....	12, 25, 95
	Alkaloids, n.o.s., or Alkaloid salts, n.o.s., poisonous solid.	6.1	UN1544	I	POISON.	POISON, KEEP AWAY FROM FOOD.	None	211	242	5 kg.....	50 kg.....	12, 25, 95
				II	POISON.	POISON, KEEP AWAY FROM FOOD.	None	212	242	25 kg.....	100 kg.....	12, 25, 95
				III	POISON.	POISON, KEEP AWAY FROM FOOD.	None	213	240	100 kg.....	200 kg.....	12, 25, 95

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (§173.***)		Quantity limitations		Vessel stowage requirements (10)	
							(8A)	(8B)	(9A)	(9B)	(10A)	(10B)
(1)	Alkyamines, n.o.s. or Polyalkylamines, n.o.s., corrosive, flammable.	8	UN2734	I	CORROSIVE, FLAMMABLE LIQUID.	N1, N11, N34, TB, T31, T8, T31.....	None	201	243	0.5 L.....	2.5 L.....	1.3.....
	Alkyamines, n.o.s. or Polyalkylamines, n.o.s., flammable, corrosive.	3	UN2733	II	CORROSIVE, FLAMMABLE LIQUID.	T42.....	None	202	243	1 L.....	30 L.....	1.3.....
	Alkyamines, n.o.s. or Polyalkylamines, n.o.s., corrosive,	8	UN2735	II	CORROSIVE, FLAMMABLE LIQUID.	T8, T31.....	None	201	243	0.5 L.....	2.5 L.....	1.3.....
	Alkyamines, n.o.s. or Polyalkylamines, n.o.s., corrosive,	8	UN2584	III	CORROSIVE, FLAMMABLE LIQUID.	B1, T8, T31.....	None	203	242	5 L.....	60 L.....	1.3.....
	Alky, Aryl or Toluene sulfonic acid, liquid, with more than 5 per cent free sulfonic acid.	8	UN2586	III	CORROSIVE, FLAMMABLE LIQUID.	B4, N1, N11, N34, T42.....	None	201	242	0.5 L.....	2.5 L.....	1.2.....
	Alky, Aryl or Toluene sulfonic acid, liquid, with not more than 5 per cent free sulfonic acid.	8	UN2583	II	CORROSIVE, FLAMMABLE LIQUID.	T8.....	154	202	242	1 L.....	30 L.....	1.2.....
	Alky, Aryl or Toluene sulfonic acid, solid, with more than 5 per cent free sulfonic acid.	8	UN2585	II	CORROSIVE, FLAMMABLE LIQUID.	T8.....	154	203	241	5 L.....	60 L.....	1.2.....
	Alky, Aryl or Toluene sulfonic acid, solid, with not more than 5 per cent free sulfonic acid.	6.1	UN2430	III	KEEP AWAY FROM FOOD.	T8.....	154	212	240	15 kg.....	50 kg.....	1.2.....
	Alky phenols, n.o.s. (including C2-C8 homologues) liquid.	6.1	UN2430	II	KEEP AWAY FROM FOOD.	T8.....	153	203	241	25 kg.....	100 kg.....	1.2.....
	Alky phenols, n.o.s. (including C2-C8 homologues) solid.	6.1	UN2430	II	KEEP AWAY FROM FOOD.	T8.....	153	213	240	60 L.....	220 L.....	1.2.....
	Allithrin, see Pesticides, liquid, toxic, n.o.s.	3	UN2333	II	FLAMMABLE LIQUID.	T8.....	None	202	243	1 L.....	60 L.....	1.3.....
	Allyl acetate	3	UN1098	I	FLAMMABLE LIQUID, POISON.	B14, B32, 10.	None	227	244	Forbidden....	Forbidden....	5.....
	Allyl alcohol	3	UN2334	I	FLAMMABLE LIQUID, POISON.	B14, B32, 10.	None	227	244	Forbidden....	Forbidden....	5.....
	Allyl bromide	3	UN1099	I	FLAMMABLE LIQUID, POISON.	T18.....	None	201	243	Forbidden....	30 L.....	1.3.....

Symbol (1)	Hazard class (2)	Identification numbers (3)	Pack- ing group (4)	Labels (5)	Special provisions (6)	Packaging authorizations (8), (9)	Quantity limitations (9)	Vessel stowage requirements (10)		
Allyl chloride.....	3	UN1100	I	FLAMMABLE LIQUID, POISON.	T18, T26.....	None 201	243 Forbidden	30 L..... 1,3.....	5..... 1,3.....	12, 40 21, 40, 77, 95
Allyl chlorocarbonate, see Allyl chloroformate.	8	UN1722	I	CORROSIVE, LIQUID, POISON.	10, B14, B32, N1, N34, N41, T8.....	None 227	244 Forbidden	1..... 1,3.....	5..... 1,3.....	12, 40 21, 40, 77, 95
Allyl ethyl ether.....	3	UN2336	II	FLAMMABLE LIQUID, POISON.	T18, T26.....	None 202	243 Forbidden	60 L..... 1,3.....	5..... 1,3.....	12, 40 21, 40, 77, 95
Allyl formate.....	3	UN2336	I	FLAMMABLE LIQUID, POISON.	B1, T7	150	242 Forbidden	60 L..... 220 L.....	1,3..... 1,3.....	12, 40 21, 40, 77, 95
Allyl glycidyl ether.....	3	UN2219	III	FLAMMABLE LIQUID.	N1, N11, N34,	None 201	243 Forbidden	0.5 L..... 2.5 L.....	1,3..... 1,3.....	40 5.....
Allyl iodide.....	3	UN1723	I	FLAMMABLE LIQUID, CORROSIVE.	N1, N15, T18, N16, N17, N26, T17,	None 202	243 Forbidden	60 L..... 1.....	5..... 1.....	21, 25, 40, 95 21, 40, 77
Allyl isothiocyanate, inhibited.....	6.1	UN1545	II	CORROSIVE.....	B2, B6, N16, N26, N34, T8, T26, B8, B11, B14,	None 202	242 Forbidden	30 L..... 1.....	1..... 1.....	21, 25, 40, 95 21, 40, 77
Allyl/trichlorosilane, stabilized.....	8	UN1724	II	CORROSIVE.....	N34, T17, B11.....	None 181	244 Forbidden	1..... 1.....	5..... 5.....	21, 25, 40, 95 21, 40, 77
Aluminum allyl halides.....	4.2	UN3052	I	SPONTANE- OUSLY COMBUSTI- BLE,	T28, T29, T40.	None 181	244 Forbidden	1..... 1.....	5..... 5.....	21, 25, 40, 95 21, 40, 77
Aluminum alkyl/s.....	4.2	UN3051	I	SPONTANE- OUSLY COMBUSTI- BLE,	B9, B11, B14, T28, T40.	None 181	244 Forbidden	1..... 1.....	5..... 5.....	21, 25, 40, 95 21, 40, 77
Aluminum borohydride or Aluminum boro- hydride in devices.	4.2	UN2870	I	SPONTANE- OUSLY COMBUSTI- BLE,	DANGEROUS WHEN WET.	None 181	244 Forbidden	1..... 1.....	5..... 5.....	21, 25, 40, 95 21, 40, 77
Aluminum bromide, anhydrous	8	UN1725	II	SPONTANE- OUSLY COMBUSTI- BLE,	DANGEROUS WHEN WET.	None 154	212 Forbidden	15 kg..... 15 kg.....	1,2..... 1,2.....	21, 25, 40, 95 21, 40, 77

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging Authorizations (§173.***)			Quantity Limitations (§10)	Vessel stowage requirements (10)	Other storage provisions (10C)			
							(8A)	(8B)	(8C)	Passenger aircraft or aircraft only	Cargo aircraft only				
(1)	Aluminum bromide, solution..... Aluminum carbide..... Aluminum chloride, anhydrous..... Aluminum chloride, solution..... Aluminum dross, wet or hot..... Aluminum ferrasilicon powder..... Aluminum hydride..... Aluminum nitrate..... Aluminum phosphate solution, see Corrosive liquids, n.o.s. Aluminum phosphide..... Aluminum phosphide pesticides..... Aluminum powder, coated, not less than 20 per cent aluminum powder, particle size less than 250 microns..... Aluminum powder, uncoated..... Aluminum resinate..... Aluminum silicon powder, uncoated..... Amatols, see Explosives, blasting, type B..... 2-Amino-4-chlorophenol..... 2-Amino-5-diethylaminopentane..... 2-(2-Aminoethoxy) ethanol..... N-Aminoethylpiperazine..... Aminophenols (o-, m-, p-)..... Aminopropylmethamphetamine, see Alkyamines, n.o.s. <i>n</i> -Aminopropylmorpholine, see Alkyamines, n.o.s.. Aminopyridines (o-, m-, p-)..... Ammonia, anhydrous, liquefied..... Ammonia solutions, density (specific gravity) between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia.	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)	
	8 4.3	UN2650 UN1394	III II	CORROSIVE..... DANGEROUS WHEN WET. CORROSIVE..... CORROSIVE.....	T8..... A20, N34, N41. T8.....	154 None	203 212	241 242	5 L..... 15 kg.....	60 L..... 50 kg.....	1.2..... 1.3.....	1.2..... 1.3.....			
	8 8	UN1726 UN2581	II III	DANGEROUS WHEN WET, POISON..... CORROSIVE.....	A19..... A19.....	154 154	212	240 241	15 kg..... 5 L.....	50 kg..... 60 L.....	1.2..... 1.2.....	1.2..... 1.2.....	40		
	4.3	UN1395	II	DANGEROUS WHEN WET, POISON.....	A19.....	None	212	242	15 kg.....	50 kg.....	1.3.....	1.3.....	40		
	4.3	UN2463	I	DANGEROUS WHEN WET, KXIDIZER.....	A19..... A1, A29.....	None	211	242	Forbidden.....	15 kg.....	1.3.....	5.....			
	5.1	UN1498	III	KXIDIZER.....	A1, A29.....	152	213	240	25 kg.....	100 kg.....	1.2.....	1.2.....			
	4.3	UN1397	I	DANGEROUS WHEN WET, POISON, n.o.s.	A19, N2.....	None	211	242	Forbidden.....	15 kg.....	1.3.....	5.....	40, 85		
	6.1 4.1	UN3048 UN1309	I II	POISON..... FLAMMABLE SOLID.	N2.....	None 151	211 212	242 240	15 kg..... 15 kg.....	15 kg..... 50 kg.....	1.2..... 1.3.....	1.2..... 1.3.....	95 13, 39		
	4.3	UN1396	II	DANGEROUS WHEN WET, FLAMMABLE SOLID.	A19, A20.....	None	212	240	15 kg.....	50 kg.....	1.3.....	1.3.....	39		
	4.1	UN2715	III	DANGEROUS WHEN WET, SOLID.	A1, A19.....	None	151	213	240	25 kg.....	100 kg.....	1.3.....	1.3.....		
	4.3	UN1398	III	DANGEROUS WHEN WET.	T1.....	None	213	241	25 kg.....	100 kg.....	1.3.....	1.3.....	40		
	6.1 6.1	UN2673 UN2946	II III	POISON..... KEEP AWAY FROM FOOD.	T1..... T2..... T7..... T1.....	None 153	203	242 240	25 kg..... 60 L..... 5 L..... 100 kg.....	100 kg..... 220 L..... 60 L..... 200 kg.....	1.2..... 1.2..... 1.2..... 1.2.....	1.2..... 1.2..... 1.2..... 1.2.....	95 34		
	8 6.1	UN3055 UN2512	III III	CORROSIVE..... COPROPSYLIC ACID, LIQUID, LIQUEFIED..... KEEP AWAY FROM FOOD.	T2..... T7..... T1.....	154 154 153	203 203 213	241 240	5 L..... 60 L..... 100 kg.....	60 L..... 60 L..... 200 kg.....	1.2..... 1.2..... 1.2.....	1.2..... 1.2..... 1.2.....	12, 12, 12		
	6.1	UN2671	II	POISON.....	T7.....	None	212	242	25 kg.....	100 kg.....	1.3.....	1.3.....	12, 40,		
	2.3	UN1005	III	POISON GAS.....	10.....	None	304	314, 315	Forbidden.....	1.2.....	5.....	5.....	95 40, 57		
	8	UN2672	III	CORROSIVE.....	T14.....	154	203	241	5 L.....	60 L.....	1.2.....	1.2.....	40, 85		

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(8) Packaging authorizations (GHS73***)		(9) Quantity limitations		Vessel stowage requirements (10)
							Non-bulk packaging (8E)	Bulk packaging (8C)	Cargo aircraft only (8A)	Cargo aircraft or railcar (8B)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10A)	(10B)	Other stowage provisions (10C)
	Ammonium nitrate, liquid (not concentrated Solution). Ammonium nitrate, with more than 0.2 per cent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance. Ammonium nitrate, with not more than 0.2 per cent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance. Ammonium nitrite.....	5.1 1.1D	UN2426 UN0222	II OXIDIZER	B6, B17, T25.	None None	243	240	25 kg.....	100 kg.....	1,3.....
	Ammonium perchlorate.....	5.1 1.1D	UN1442 UN0402	II OXIDIZER	A1, A29.....	152	213	240	25 kg.....	100 kg.....	1,3.....
	Ammonium perchlorate. Ammonium permanganate, see Permanaganates, inorganic, n.o.s.. Ammonium persulfate.....	5.1 1.1D	UN1444 UN0004	III OXIDIZER	N13, N34 .. A1, A29.....	212	212	240	5 kg.....	25 kg.....	1,2....
	Ammonium picrate, dry or wetted with less than 10 per cent water by weight. Ammonium picrate, wetted with not less than 10 per cent water by weight.	4.1 1.1D	UN1310	I FLAMMABLE SOLID.	A2, N15, N34, N41, T14	211	None	240	25 kg.....	100 kg.....	1,2....
	Ammonium polysulfide, solution.....	8	UN2818	II CORROSIVE, POISON.	None	202	243	1 L.....	30 L.....	1,3.....	1.....
	Ammonium polyvanadate.....	6.1	UN2861	II POISON.....	None	212	242	25 kg.....	100 kg.....	1,2....	1,2....
	Ammonium silicofluoride, see Ammonium fluorosilicate. Ammonium sulfide solution.....	8	UN2683	II CORROSIVE, POISON, FLAMMABLE LIQUID.	T14	None	202	243	1 L.....	30 L.....	1.....
	Ammunition, blank, see Cartridges for weapons, blank.						1,2G	UN0171			36.....
	Ammunition, illuminating with or without burster, expelling charge or propelling charge.						1.3G	UN0254			12, 26, 40.....
	Ammunition, illuminating with or without burster, expelling charge or propelling charge.						1.4G	UN0297			95.....
	Ammunition, incendiary liquid or gel, with burster, expelling charge or propelling charge.						1.3J	UN0247			12, 22, 49.....

(1)	Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing group	Labels	Special provisions	(6) Packaging authorizations [Annex II]			(7) Quantity limitations			(8) Vessel stowage requirements						
								(5)	(4)	(3)	(6A)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)	(10C)
		<i>Antifreeze liquid, see Flammable liquids, n.o.s.</i>																		
D		<i>Antimony chloride, see Antimony trichloride.</i>						I	Poison.....		None	201	243	1 L.....	30 L.....	1.2.....	1.2.....	1.2.....	1.2.....	95
D		<i>Antimony compounds, Inorganic, n.o.s., liquid.</i>	6.1	UN1549	II	Poison.....					None	202	243	5 L.....	60 L.....	1.2.....	1.2.....	1.2.....	1.2.....	95
D					III	KEEP AWAY FROM FOOD.					None	203	240	60 L.....	220 L.....	1.2.....	1.2.....	1.2.....	1.2.....	34
D		<i>Antimony compounds, Inorganic, n.o.s., solid.</i>	6.1	UN1549	I	Poison.....					None	211	242	5 kg.....	50 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95
D					II	Poison.....					None	212	242	25 kg.....	100 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95
D					III	KEEP AWAY FROM FOOD.					None	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	34
D		<i>Antimony lactate.</i>	6.1	UN1550	II	KEEP AWAY FROM FOOD.					None	202	242	1 L.....	30 L.....	1.....	1.....	1.....	1.....	34
D		<i>Antimony pentachloride, liquid.</i>	8	UN1730	II	CORROSIVE..... T26, T27,					None	202	242	1 L.....	30 L.....	1.....	1.....	1.....	1.....	40
D		<i>Antimony pentachloride, solution.</i>	8	UN1731	II	CORROSIVE..... T26, T27,					None	202	242	1 L.....	30 L.....	1.....	1.....	1.....	1.....	40
D		<i>Antimony pentachloride.</i>	8	UN1732	II	CORROSIVE, POISON.	Nf, N3, N11, N16, N26, N35, T12, T26,				None	202	243	Forbidden	30 L.....	1.....	5.....	5.....	40	
D					III	KEEP AWAY FROM FOOD.						153	240	100 kg.....	200 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	34
D		<i>Antimony potassium tartrate.</i>	6.1	UN1551	III	KEEP AWAY FROM FOOD.						153	240	100 kg.....	200 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	34
D		<i>Antimony powder.</i>	6.1	UN2871	III	KEEP AWAY FROM FOOD.						153	240	100 kg.....	200 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	34
D		<i>Antimony sulfide and a chlorate, mixtures of.</i>				Forbidden														
D		<i>Antimony sulfide, solid, see Antimony compounds, Inorganic, n.o.s..</i>																		
D		<i>Antimony tribromide, solid.</i>	6	NA1549	II	CORROSIVE..... B2					154	240	25 kg.....	100 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95	
D		<i>Antimony tribromide, liquid.</i>	6	NA1549	II	CORROSIVE..... B2					154	202	1 L.....	30 L.....	1.....	1.....	1.....	1.....	40	
D		<i>Antimony trichloride, liquid.</i>	8	UN1733	II	CORROSIVE..... B2					154	240	15 kg.....	50 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95	
D		<i>Antimony trichloride, solid.</i>	8	UN1733	II	CORROSIVE..... B2					154	240	25 kg.....	50 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95	
D		<i>Antimony trifluoride, solid.</i>	6	NA1549	II	CORROSIVE..... B2					154	202	1 L.....	30 L.....	1.....	1.....	1.....	1.....	40	
D		<i>Aqua ammonia, see Ammonia solution, etc.</i>	6	NA1549	II	Nonflammable..... BLE GAS.					305	314	75 kg.....	150 kg.....	1.3.....	1.3.....	1.3.....	1.3.....	85	
D		<i>Argon, compressed.</i>	2.2	UN1006	II	Nonflammable..... BLE GAS.					315	318	50 kg.....	500 kg.....	1.3.....	1.3.....	1.3.....	1.3.....	85	
D		<i>Argon, refrigerated liquid (cryogenic liquid).</i>	2.2	UN1951	II	Poison.....					320	316	50 kg.....	500 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95	
D		<i>Arsenic.</i>	6.1	UN1558	II	Poison.....					318	316	50 kg.....	500 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95	
D		<i>Arsenic acid, liquid.</i>	6.1	UN1553	II	Poison.....					318	316	50 kg.....	500 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95	
D		<i>Arsenic acid, solid.</i>	6.1	UN1554	II	Poison.....					318	316	50 kg.....	500 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95	
D		<i>Arsenic dust.</i>	6.1	UN1562	II	Poison.....					318	316	50 kg.....	500 kg.....	1.2.....	1.2.....	1.2.....	1.2.....	95	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	(8) Packaging authorizations (6)(72)**		(9) Quantity limitations		(10) Vessel storage requirements		
							(8A)	(8B)	(8C)	(8D)	(8E)	(8F)	
(1)	Arsenical pesticides, liquid, toxic, n.o.s., flash point less than 23 degrees C.	3	UN2760	I FLAMMABLE LIQUID, POISON, II FLAMMABLE LIQUID, POISON,		None 201	243	Forbidden	30 L.....	1.3.....	5.....		
				T42.....		None 202	243	1 L.....	60 L.....	1.3.....	1.....		
	Arsenical pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1	UN2993	I POISON, II FLAMMABLE LIQUID, POISON, III KEEP AWAY FROM FOOD.		None 201	243	1 L.....	30 L.....	1.....	1.....	21, 95	
				T14.....		None 202	243	5 L.....	60 L.....	1.2.....	1.....		
	Arsenical pesticides, liquid, toxic, n.o.s.	6.1	UN2994	I POISON, II POISON, III KEEP AWAY FROM FOOD.		None 201	243	1 L.....	220 L.....	1.2.....	1.2.....	21, 34	
				T42.....		None 202	243	5 L.....	30 L.....	1.....	1.....		
	Arsenical pesticides, liquid, toxic, n.o.s.	6.1	UN2759	I POISON, II POISON, III KEEP AWAY FROM FOOD.		None 201	243	1 L.....	60 L.....	1.2.....	1.2.....	95	
				T14.....		None 203	241	60 L.....	220 L.....	1.2.....	1.2.....		
	Arsenical bromide.	6.1	UN1555	I POISON, II POISON, III POISON.		None 211	242	5 kg.....	50 kg.....	1.2.....	1.2.....	95	
						None 212	242	25 kg.....	100 kg.....	1.2.....	1.2.....		
	Arsenic chloride, see Arsenic trichloride	6.1	UN1556	I POISON, II POISON, III KEEP AWAY FROM FOOD.		None 213	242	100 kg.....	200 kg.....	1.2.....	1.2.....		
	Arsenical compounds, liquid, n.o.s., including: Arsenates, n.o.s.; Arsenites, n.o.s.; Arsenic sulfides, n.o.s.; Organic compounds of arsenic, n.o.s., and Arsenic mixtures, n.o.s.	6.1	UN1557	I POISON, II POISON, III POISON.		None 214	242	25 kg.....	100 kg.....	1.2.....	1.2.....	34, 40	
						None 215	243	1 L.....	30 L.....	1.2.....	1.2.....	95	
	Arsenic compounds, solid, n.o.s., including: Arsenates, n.o.s.; Arsenites, n.o.s.; Arsenic sulfides, n.o.s.; Organic compounds of arsenic, n.o.s., and Arsenic mixtures, n.o.s.	6.1		I POISON, II POISON, III KEEP AWAY FROM FOOD.		None 202	243	5 L.....	60 L.....	1.2.....	1.2.....	40, 95	
						None 203	241	60 L.....	220 L.....	1.2.....	1.2.....		
						None 211	242	5 kg.....	50 kg.....	1.2.....	1.2.....		
D	Arsenic pentoxide.	6.1	UN1559	I POISON, II POISON, III POISON.		None 212	242	25 kg.....	100 kg.....	1.2.....	1.2.....	95	
	Arsenic sulfide.	6.1	NA1557			None 213	240	100 kg.....	200 kg.....	1.2.....	1.2.....		
	Arsenic sulfide and a chlorate, mixtures of.	6.1	UN1560	I POISON, II POISON.		None 212	242	25 kg.....	100 kg.....	1.2.....	1.2.....	95	
	Arsenic trichloride.	6.1	UN1561			B14, B32, 10.	227	244	Forbidden	Forbidden	1.2.....	1.2.....	40, 95
D	Arsenic trioxide.	6.1	NA1557			None 212	242	25 kg.....	100 kg.....	1.2.....	1.2.....	95	
	Arsenic, white, solid, see Arsenic trioxide.					None 212	242	25 kg.....	100 kg.....	1.2.....	1.2.....		

SMT Sols	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing group	Packaging authorizations (§173...) ¹⁾			Quantity limitations (§) ²⁾			Vessel stowage requirements
					(5)	(6)	(7)	(8A)	(8B)	(8C)	
I	Arsenic acid, solid see Arsenic trioxide Arsenious and mercuric iodide solution, see Arsenic compounds, liquid, n.o.s. Arising.....	2.3	UN2188	1	POISON GAS, FLAMMABLE GAS.	10.....	None	192	245	Forbidden....	Forbidden.... 1..... 5..... 40, 95
	Articles, explosive, n.o.s.....	1.4S	UN0349								
	Articles, explosive, n.o.s.....	1.4B	UN0350								
	Articles, explosive, n.o.s.....	1.4C	UN0351								
	Articles, explosive, n.o.s.....	1.4D	UN0352								
	Articles, explosive, n.o.s.....	1.4G	UN0353								
	Articles, explosive, n.o.s.....	1.1L	UN0354								
	Articles, explosive, n.o.s.....	1.2L	UN0355								
	Articles, explosive, n.o.s.....	1.3L	UN0356								
	Articles, pyrophoric.....	1.2L	UN0380								
	Articles, pyrotechnic for technical purposes.....	1.1G	UN0428								
	Articles, pyrotechnic for technical purposes.....	1.2G	UN0429								
	Articles, pyrotechnic for technical purposes.....	1.3G	UN0430								
	Articles, pyrotechnic for technical purposes.....	1.4G	UN0431								
	Articles, pyrotechnic for technical purposes.....	1.4S	UN0432								
	Asbestos, blue—(crocidolite) or brown amosite, mesosite.....	9	UN2122	II	CLASS 9 .....	.....	155	216	240	Forbidden....	Forbidden.... 12..... 12.....
	Asbestos, white (chrysotile, actinolite, anthophyllite, tremolite). Ascaridole (organic peroxide)	9	UN2590	III	CLASS 9 .....	.....	155	216	240	Forbidden....	Forbidden.... 12..... 12.....
D	Asphalt, at or above its flashpoint.....	Forbid- den	NA1999	III	None .....	.....	150	203	242	Forbidden....	Forbidden.... 1..... 5.....
D	Asphalt, cut back, see Tars, liquid, etc.....	Forbid- den									
D	Auto alarms, see Alarm devices, explosive.....	Forbid- den									
D	Automobile, motorcycle, tractor, or other self-propelled vehicle, engine, or other mechanical apparatus. See Vehicles, self-propelled.	Forbid- den									
D	Azauric acid (salt of) (dry)	Forbid- den									
D	Azidodithiocarbonic acid.....	Forbid- den									
D	Azidomethyl nitrate.....	Forbid- den									
D	Azido guanidine picrate (dry)	Forbid- den									
D	5-Azido-1-hydroxy tetrazole	Forbid- den									
D	Azido hydroxy tetrazole (mercury and silver salts). 3-Azido-1,2-Propylene glycol dinitrate	Forbid- den									
D	Azinophos methyl liquid.....	Forbid- den									
D	Azinophos methyl solid.....	6.1	NA21783	II	POISON.....	.....	None	202	243	1 L..... 25 kg.....	30 L..... 100 kg.....
							None	212	242	12..... 12.....	12..... 12.....

(1)	Hazard class	Identification number	Packaging group	Labels	Special provisions	Packaging authorizations [§ 735 ***]		Quantity limitations		Vessel storage requirements [10]			
						(5)	(6)	(7)	(8A)	(8B)	(9A)	(10A)	(10B)	(10C)
Paints													
1-Azidinyl phosphine oxide-(mis), see Tri- {1-azidinyl} phosphine oxide, solution. 2,2'-Azodi-(2,4-dimethyl-4-methoxy- 2,2'-Azodi-(2,4-dimethylvaleronitrile) 1,1-Azodi-(hexahydronaphthalene) Azodilobutryonitrile 2,2'-Azodi (2-methylbutyronitrile), Azolerazole (dry) ...	4.1	UN2956	I	FLAMMABLE SOLID.		None	214	None	Forbidden ...	1	5	2	
Bags, having contained sodium nitrate, empty, unwashed.	4.1	UN2953	II	FLAMMABLE SOLID.		None	214	None	Forbidden ...	1	5	2	
Barium	4.1	UN2954	II	FLAMMABLE SOLID.		None	214	None	Forbidden ...	1	5	25	
Barium alloys	4.1	UN2952	II	FLAMMABLE SOLID.		None	214	None	Forbidden ...	1	5	2	
Barium alloys, pyrophoric	4.1	UN3030	II	FLAMMABLE SOLID.		None	214	None	Forbidden ...	1	5	2, 52, 53	
Barium azide, dry or wetted with less than 50 per cent water, by weight.	1.1A	UN0224	I	FLAMMABLE SOLID,		None	204	246	Forbidden ...	100 kg.....	1.3	5	
Barium azide, wetted with not less than 50 per cent water, by weight.	4.1	UN1571	I	FLAMMABLE SOLID, POISON.		None	212	242	5 kg	50 kg.....	1.3	5	
Barium bromate	5.1	UN2719	II	OXIDIZER, POISON.		None	212	242	5 kg	50 kg.....	1.3	5	
Barium chlorate	5.1	UN1445	II	OXIDIZER, POISON.		N13, N34, T8.	None	212	242	5 kg	100 kg.....	1.2	46, 56, 95
Barium compounds, n.o.s., except Barium sulfates.	6.1	UN1564	I	POISON.....		None	211	242	5 kg	50 kg	1.2	1.2	
			II	POISON.....		None	212	242	25 kg	100 kg.....	1.2	1.2	
			III	KEEP AWAY FROM FOOD.		153	213	240	100 kg.....	200 kg.....	1.2	1.2	
Barium cyanide	6.1	UN1565	I	POISON.....		None	211	242	5 kg	50 kg	1.2	1.2	
Barium hypochlorite with more than 22 per cent available chlorine.	5.1	UN2741	II	OXIDIZER, POISON.		N13, N26, N34.	152	212	None	5 kg	25 kg	1.2	
Barium nitrate	6.1	UN1446	II	OXIDIZER, POISON.		None	212	242	5 kg	25 kg	1.2	95	
Barium oxide	6.1	UN 884	III	KEEP AWAY FROM FOOD.		153	213	240	100 kg	200 kg	1.2	1.2	
Barium perchlorate	5.1	UN1447	II	OXIDIZER, POISON.		T8	None	212	242	5 kg	25 kg	1.2	46, 95

(1)	Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifications numbers	Pack- ing group	Label's	Special provisions	(8) Packaging authorizations (¹) (²)			(9) Quantity limitations			(10) Vessel storage requirements			
								(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)	(10C)
AW		Barium permanganate.....	5.1	UN1448	I	Poison.....		None	212	242	5 kg.....	25 kg.....	25 kg.....	1.2.....	1.2.....	1.2.....	56, 69, 95
		Barium peroxide.....	5.1	UN1449	II	OXIDIZER, POISON.		None	212	2	5 kg.....	25 kg.....	25 kg.....	1.2.....	1.2.....	1.2.....	13, 95
		Barium selenate, see Selenates or Selenites.															
		Barium selenite, see Selenates or Selenites.															
		Batteries, dry, containing potassium hydroxide solid, electric, storage.	8	UN3028	III	CORROSIVE.....		159	159	None	25 kg gross.	250 kg gross.	No limit.....	1.2.....	1.2.....	1.2.....	
		Batteries, wet, filled with acid, electric storage.	8	UN2794	III	CORROSIVE.....		159	159	None	25 kg gross.	25 kg gross.	No limit.....	1.2.....	1.2.....	1.2.....	
		Batteries, wet, filled with alkali, electric storage.	8	UN2795	III	CORROSIVE.....		159	159	None	25 kg gross.	25 kg gross.	No limit.....	1.2.....	1.2.....	1.2.....	
		Batteries, wet, nonspillable, electric storage.	8	UN2800	III	CORROSIVE.....		159	159	None	No Limit.....	No Limit.....	No Limit.....	1.2.....	1.2.....	1.2.....	
		Battery fluid, acid.....	8	UN2796	I	CORROSIVE.....		154	202	242	1 L.....	30 L.....	30 L.....	1.2.....	1.....	1.....	33
		Battery fluid, alkali.....	8	UN2797	II	CORROSIVE.....		154	202	242	1 L.....	30 L.....	30 L.....	1.2.....	1.2.....	1.2.....	
		Battery lithium type, see Lithium batteries.....	3	UN1114	I	FLAMMABLE LIQUID.		150	202	242	5 L.....	60 L.....	60 L.....	1.3.....	1.....	1.....	40
		Benzene diazonium chloride (dry).....	Forbid-														
		Benzene diazonium nitrate (dry).....	Forbid-														
		Benzene-1,3-disulfhydrazide, not more than 52 per cent as a paste.	4.1	UN2971	II	FLAMMABLE SOLID.		None	214	None	15 kg.....	50 kg.....	50 kg.....	1.3.....	1.3.....	1.3.....	12, 25, 48, 52, 53, 85
		Benzene phosphorus dichloride, see.....															
		Phenyl phosphorus dichloride.	4.1	UN2970	II	FLAMMABLE SOLID.		None	214	None	15 kg.....	50 kg.....	50 kg.....	1.3.....	1.3.....	1.3.....	12, 25, 48, 52, 53, 85
		Benzene phosphorus thiodichloride, see.....															
		Phenyl phosphorus thiodichloride.															
		Benzene sulphydrazide.....	8	UN2225	III	CORROSIVE.....		154	203	241	5 L.....	60 L.....	60 L.....	1.2.....	1.2.....	1.2.....	40
		Benzene sulfonyl chloride.....	6.1	UN1885	II	POISON.....		None	212	242	25 kg.....	100 kg.....	100 kg.....	1.2.....	1.2.....	1.2.....	95
		Benzene thiozincide.....	3	UN2770	I	FLAMMABLE POISON.		None	213	243	Forbidden....	30 L.....	30 L.....	1.3.....	1.3.....	1.3.....	5

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Pack ing group	Labels	Special provisions	(8) Packaging authorizations (\$173...)			Quantity limitations		Vessel stowage requirements	
							(BA)	(B)	(7)	(BA)	(B)		
(1)	Benzoin derivative pesticides, liquid, toxic, flammable, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN3003	I	POISON, FLAMMABLE LIQUID, POISON,	T42	None	201	243	1 L	30 L	1	1.....21, 40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, liquid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN3003	I	POISON,	T18	None	202	243	5 L	60 L	1.2	1.....21, 40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, liquid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN3004	I	POISON, KEEP AWAY FROM FOOD.	T18	153	203	241	60 L	220 L	1.2	1.2.....21, 34, 40
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, liquid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2769	I	POISON, KEEP AWAY FROM FOOD.	T42	None	201	243	1 L	30 L	1	1.....40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, solid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2224	II	POISON,	T14	None	212	242	5 L	60 L	1.2	1.....40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, solid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2224	II	POISON,	T14	None	212	242	25 kg	100 kg	1.2	1.....40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, solid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2224	II	POISON,	T14	None	212	242	5 L	100 kg	1.2	1.....40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, solid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2224	II	POISON,	T14	None	212	242	5 L	200 kg	1.2	1.....40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, solid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2224	II	POISON,	T14	None	212	242	5 L	60 L	1.2	1.....26, 40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, solid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2224	II	POISON,	T14	None	212	242	5 L	100 kg	1.2	1.....26, 40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, solid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2224	II	POISON,	T14	None	212	242	5 L	30 L	1.2	1.....26, 40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoin derivative pesticides, solid, toxic, n.o.s., <i>flash point not less than 23 degrees C.</i>	6.1	UN2224	II	POISON,	T14	None	212	242	5 L	60 L	1.3	1.....40
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoyl azide.....	6.1	UN1736	II	CORROSIVE.....	B2, T9, T26.	154	202	242	1 L	30 L	1	1.....8, 40
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoyl bromide.....	6.1	UN1737	II	POISON,	N1, N26, N33, N34, T12, T26.	None	202	243	1 L	30 L	1	1.....40
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	
	Benzoyl chloride.....	6.1	UN1738	II	POISON,	B1, N1, N26, N33, T12, T26.	None	202	243	1 L	30 L	1	1.....13, 20, 40, 95
		(2)	(3)	(4)	(5)	(6)	(7)	(BA)	(B)	(8C)	(9A)	(10B)	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Plastic packaging group	Identification numbers	Labels	Special provisions	Packaging authorizations ⁽⁹⁾	Quantity limitations ⁽⁹⁾	Vessel stowage requirements ⁽¹⁰⁾	Other stowage provisions	
(1)	Benzyl chloride <i>unstabilized</i> .	6.1	UN1738	II	POISON, CORROSIVE.	BB, B11, N1, N28, N33, N34, T12, T26, B4, N1, N11, N34, N41, T18, T26, B2, T11 ...	None 202	243 1 L.....	30 L.....	1 5 13, 20	
	Benzyl chloroformate.	8	UN1739	I	CORROSIVE.	B4, N1, N11, N34, N41, T18, T26, B2, T11 ...	None 201	242 Forbidden	2.5 L.....	1 5 40	
	Benzyl dimethylamine.	8	UN2619	II	CORROSIVE.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 154	202 242 1 L.....	30 L.....	1.3 1.3 21, 40, 48	
	4-(Benzyl(ethyl)amino)-3-ethoxybenzenediazonium zinc chloride.	4.1	UN3037	II	FLAMMABLE SOLID.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 214	None ForbIDDEN	1 5 1	2	
	Benzylidene chloride.	6.1	UN1886	II	POISON.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 202	243 5 L.....	60 L.....	1 5 40, 95	
	Benzyl iodide.	6.1	UN2653	II	POISON.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 202	243 5 L.....	60 L.....	1 5 12, 40, 95	
	4-(Benzyl(methyl)amino)-3-ethoxybenzenediazonium zinc chloride.	4.1	UN3038	II	FLAMMABLE SOLID.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 214	None ForbIDDEN	1 5 1	2	
	Benzilium compounds, n.o.s.	6.1	UN1566	II	POISON.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 212	242 25 kg.....	100 kg.....	1.2 1.2 95	
	Benzilium nitrate.	5.1	UN2664	II	OXIDIZER, POISON.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 212	242 25 kg.....	25 kg.....	1.3 1.3 12, 48, 95	
	Benzilium, powder.	6.1	UN1567	II	POISON.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 212	242 15 kg.....	50 kg.....	1.2 1.2 24, 95	
	Bifluorides, n.o.s., solid.	8	UN1740	II	CORROSIVE.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 212	240 15 kg.....	50 kg.....	1.2 1.2 25, 26, 40	
	Bifluorides, n.o.s., solution.	8	UN1740	II	CORROSIVE.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 202	243 11	30 L.....	1.2 1.2 26, 26, 40	
	Biphenyl triazone.	ForbIDDEN	3	UN2782	- FLAMMABLE LIQUID, POISON.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 201	243 ForbIDDEN	30 L.....	1.3 5	
	Bipyridium pesticides, liquid, toxic, flammable, toxic, n.o.s., flash point less than 23 degrees C.	6.1	UN3015	I	FLAMMABLE LIQUID, POISON.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 201	243 1 L.....	30 L.....	1 1 21, 40, 95	
	Bipyridium pesticides, liquid, toxic, flammable, n.o.s., flash point less than 23 degrees C.	6.1	UN3016	I	FLAMMABLE LIQUID, KEEP AWAY FROM FOOD.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 153	242 60 L.....	220 L.....	1.3 1.3 21, 34, 40	
	Bipyridium pesticides, liquid, toxic, n.o.s.	6.1	UN3016	I	POISON.	BB, B11, N1, N28, N33, N34, T12, T26, B2, T11 ...	None 201	243 1 L.....	30 L.....	1 1 40, 95	
							None None	202	243 5 L.....	60 L.....	1 1 40, 95

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(8) Packaging authorizations		(9) Quantities limitations		(10) Vessel stowage requirements			
							(5)	(6)	(7)	(8A)	(8B)	(10A)	(10B)	
B	Boron trifluoride.....	8	UN2692	I	CORROSIVE AND POISON.	N1, N11, N26, N34, T18, T27.	None	201	243	Forbidden...	2.5 L.....	1.....	12, 34	
B ₃	Boron trifluoride diethyl etherate.....	2.3	UN1741	II	POISON GAS, CORROSIVE, POISON GAS.....	10, B14, B33, B14, B31, 10.	None	304	244	Forbidden...	1.3.....	5.....	25, 34, 40, 85	
B ₃	Boron trifluoride.....	2.3	UN1008	II	CORROSIVE.....	B2, B6, T9, T27, A19, T8, T26.	None	302	245	Forbidden...	1.....	5.....	40, 95	
B ₃	Boron trifluoride acetic acid complex	8	UN1742	II	CORROSIVE, FLAMMABLE LIQUID.	T9, T27, A19, T8, T26.	None	202	242	1 L.....	30 L.....	1.2.....	40	
B ₃	Boron trifluoride diethyl etherate.....	8	UN2604	I	CORROSIVE, FLAMMABLE LIQUID.	T9, T27, A19, T8, T26.	None	202	243	0.5 L.....	2.5 L.....	1.....	5.....	
B ₃	Boron trifluoride dihydrate	8	UN2851	II	DANGEROUS WHEN WET, CORROSIVE, FLAMMABLE LIQUID.	T9, T27, A19, T8, T26.	None	212	240	15 kg.....	50 kg.....	1.3.....	12, 40	
B ₃	Boron trifluoride dimethyl etherate	4.3	UN2965	II	CORROSIVE, FLAMMABLE LIQUID.	B2, T9, T27.	None	202	243	1 L.....	5 L.....	1.....	5.....	
B ₃	Boron trifluoride propionic acid complex	8	UN1743	II	FLAMMABLE LIQUID.	T7, T30.....	150	202	242	1 L.....	30 L.....	1.2.....	1.2.....	
B ₃	Box for gum, see Nitrocellulose.....	3	UN1118	II	FLAMMABLE LIQUID.	B1, T7, T30.	150	203	242	5 L.....	60 L.....	1.3.....	1.....	
B ₃	Brake fluid, hydraulic.....	.....	.....	III	OXIDIZER.....	B10, B12.....	152	212	240	5 kg.....	220 L.....	1.3.....	46, 56
Bromates; Inorganic, n.o.s.....	5.1	UN1450	II	CORROSIVE, POISON.	N1, N11, N34, T18, T41.	None	227	249	Forbidden...	1.....	5.....	12	12	
Bromine or Bromine solutions	8	UN1744	I	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bromine azide.....	Forbid-	den	2.3	UN2901	I	POISON GAS, CORROSIVE, OXIDIZER.	B12, B14, B31, 10.	None	304	244	Forbidden...	1.....	5.....	31, 40, 95
Bromine chloride	Bromine pentfluoride	5.1	UN1745	I	OXIDIZER, POISON, CORROSIVE.	B14, B30, 10.	None	228	244	Forbidden...	1.....	5.....	13, 25, 40, 95	
Bromine trifluoride	5.1	UN1746	I	OXIDIZER, POISON, CORROSIVE.	B14, B32, 10.	None	228	244	Forbidden...	1.....	5.....	13, 25, 40, 95		
Bromoacetic acid, solid	8	UN1938	II	.....	N26, N34, T9, B2, T9.	154	212	240	15 kg.....	50 kg.....	1.2.....	1.2.....	
Bromoacetic acid, solution	8	UN1938	II	CORROSIVE.....	.....	154	202	242	1 L.....	30 L.....	1.2.....	1.2.....	

Symbol	Hazardous materials descriptions and proper shipping name ^{a,c}	Hazard class	Identifica-tion numbers	Pack- ing group	Labels	Special provisions	(6) Packaging authorizations (§ 173.***)		(9) Quantity limitations		(10) Vessel stowage requirements		
							(5)	(6)	(7)	(8A)	(8B)	(8C)	
(1)	Bromoacetone	6.1	UN1569	I	POISON.....	B14, B30, 10, T8,	None	193	244	Forbidden	1	5	
	Bromoacetyl bromide.....	8	UN2513	II	CORROSIVE.....	B2, T8, T26.	154	202	242	1 L.....	30 L.....	1	
	Bromobenzene	3	UN2514	III	FLAMMABLE LIQUID.....	B1, T1	150	203	242	60 L.....	220 L.....	1.3.....	
	Bromobenzyl cyanides, liquid.....	6.1	UN1694	I	POISON.....	T18	None	201	243	Forbidden	30 L.....	1	
	Bromobenzyl cyanides, solid	6.1	UN1694	I	POISON.....	T18	None	211	241	Forbidden	50 kg.....	1	
	2-Bromobutane.....	3	UN2339	II	FLAMMABLE LIQUID.....	T1	150	202	242	5 L.....	60 L.....	1.3.....	
	Bromo-chloromethane	6.1	UN1887	III	KEEP AWAY FROM FOOD.....	T7	153	203	241	60 L.....	220 L.....	1.2.....	
	4-Bromo-1,2-dinitrobenzene.....	Forbid-den	3	UN2340	II	FLAMMABLE LIQUID.....	T7	150	202	242	5 L.....	60 L.....	1.3.....
	2-Bromoethyl ethyl ether.....	6.1	UN2515	III	KEEP AWAY FROM FOOD.....	T7	153	203	241	60 L.....	220 L.....	1.3.....	
	Bromoform	3	UN2341	III	FLAMMABLE LIQUID.....	T7, T30	150	203	242	60 L.....	220 L.....	1.3.....	
	1-Bromo-3-methylbutane	3	UN2342	II	FLAMMABLE LIQUID.....	T7, T30	150	202	242	5 L.....	60 L.....	1.3.....	
	Bromomethylpropanes.....	3	UN2342	II	FLAMMABLE LIQUID.....	B1, T7, T30	150	203	242	60 L.....	220 L.....	1.3.....	
	1-Bromo-3-nitrobenzene (unstable at 56 deg C.)	Forbid-den	3	UN2343	II	FLAMMABLE LIQUID.....	T1	150	202	242	5 L.....	60 L.....	1.3.....
	2-Bromopentane.....	3	UN2344	II	FLAMMABLE LIQUID.....	T7	150	202	242	5 L.....	60 L.....	1.3.....	
	2-Bromopropane	3	UN2345	II	FLAMMABLE LIQUID.....	T8	150	202	242	5 L.....	60 L.....	1.3.....	
	Bromosilane	Forbid-den	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Bromotoluene-alpha, see Benzyl bromide	2.1	UN2419	II	FLAMMABLE GAS.....	B13	None	304	244	Forbidden	150 kg.....	1.3.....	
	Bromotrifluoroethylene	2.1	UN1009	II	NONFLAMMA- BLE GAS.....	.....	306	304	314,	75 kg.....	150 kg.....	1.3.....
	Bromotrifluoromethane (F-13B1 or H-1301)	6.1	UN1570	I	POISON.....	.....	None	212	242	5 kg.....	50 kg.....	1.2.....
	Brucine.....	1.1D	UN0043	II	FLAMMABLE GAS.....	.....	306	304	314,	.....	150 kg.....	1.3.....
	Bursters, explosive.....	2.1	UN1010	II	FLAMMABLE GAS.....	.....	306	304	315	.....	150 kg.....	1.2.....
	Butadienes, inhibited	2.1	UN1011	II	FLAMMABLE GAS.....	.....	306	304	314,	.....	150 kg.....	1.3.....
	Butane or Butane mixtures see also Petro- leum gases, liquefied, having similar properties in cartridges each not exceeding 500 grams, see Re- ceptacles, etc..	.....	.....	.....	.....	.....	.....	.....	.....	.....	40, 85	40, 85

Syr- cols (1)	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing group	Labels	Special provisions	Packaging authorizations (§ 173.11)		Quantity limitations (§ 173.12)		Vessel storage requirements (§ 173.13)	
							Excep- tions (8A)	Bulk packing- spur- ting (8C)	Cargo aircraft only (8E)	Cargo vessel (8A)	Cargo vessel (8B)	Cargo vessel (8A)
Butanediol	(2)	(3)	3 UN2346	II FLAMMABLE LIQUID.	T1..... B1, T1	150 202 150 203	242 5 L..... 242 60 L.....	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	
1,24-Buteneol trinitrate		3	UN1120	II FLAMMABLE LIQUID.	T1..... B1, T1	150 202 150 203	242 5 L..... 242 60 L.....	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	
Butanolis		3	.....	III FLAMMABLE LIQUID.	.....	.....	.....	.....	.....	.....	.....
tert-Butiodiarylcarbonyl azide		3	UN2708	II FLAMMABLE LIQUID.	T1	150 203	241 60 L.....	220 L.....	1,3.....	1,3.....	1,3.....	
Butiroyl		3	UN1123	II FLAMMABLE LIQUID.	T1	150 202	242 5 L.....	60 L.....	1,3.....	1,3.....	1,3.....	
Butyl acetates		3	.....	III FLAMMABLE LIQUID.	B1, T1	150 202	241 60 L.....	220 L.....	1,3.....	1,3.....	1,3.....
Butyl acid phosphate		8 UN1718	III CORROSIVE FLAMMABLE LIQUID.	T7..... T8.....	154 203 150 202	241 5 L..... 242 5 L.....	60 L..... 60 L.....	1,2..... 1,3.....	1,2..... 1,3.....	1,2..... 1,3.....	1,2..... 1,3.....	
Butyl acrylate		3 UN2348	II FLAMMABLE LIQUID.	B1, T7, T30.	150 202	241 60 L.....	220 L.....	1,3.....	1,3.....	1,3.....	1,3.....	
Butyl alcohols, see Butanols		3 UN1125	II FLAMMABLE LIQUID.	T8	150 202	242 5 L.....	60 L.....	1,3.....	1,3.....	1,3.....	40	
n-Butylamine		6.1 UN2738	II POISON, FLAMMABLE LIQUID.	T8	None 202 B1, T1	243 5 L..... 242 60 L.....	60 L..... 220 L.....	1,2..... 1,3.....	1,2..... 1,3.....	1,2..... 1,3.....	40, 95	
n-Butyl benzenes		3 UN2709	III FLAMMABLE LIQUID.	T1	150 203	242 5 L.....	60 L.....	1,3.....	1,3.....	1,3.....	1,3.....	
n-Butyl bromide		3 UN1126	II FLAMMABLE LIQUID.	T1	150 202	242 5 L.....	60 L.....	1,3.....	1,3.....	1,3.....	1,3.....	
n-Butyl chloride, see Chlorobutanes see Butylchloroformate		6.1 NA2743	I POISON, CORROSIVE. POISON, CORROSIVE.	B14, B32, 10, T18	None 227 None	244 5 L..... 243 201	Forbidden..... Forbidden.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	12, 40, 95	
n-Butylchloroformate		6.1 UN2743	I POISON, CORROSIVE.	.....	.....	225 None	Forbidden.....	1,3.....	1,3.....	1,3.....	12, 40
tert-Butyl cumyl peroxide, technically pure		5.2 UN2091	II ORGANIC PEROXIDE.	.....	152 225	None 5 L.....	10 L.....	1	5.....	1	5.....
tert-Butylcyclohexylchloroformate		6.1 UN2747	III KEEP AWAY FROM FOOD.	.....	153 203	241 60 L.....	220 L.....	1,3.....	1,3.....	1,3.....	12, 13, 25, 34
n-Butyl-4,4-di-(tertbutylperoxy) valerate, not more than 52 per cent with inert solid		5.2 UN2141	II ORGANIC PEROXIDE.	.....	None 225	6 kg.....	10 kg.....	1	5.....	1	5.....
n-Butyl-4,4-di-(tertbutylperoxy) valerate, technically pure		5.2 UN2140	II ORGANIC PEROXIDE.	.....	152 225	None 6 L.....	10 L.....	1	5.....	1	5.....
Butylene		2.1 UN1012	II FLAMMABLE GAS.	.....	None 304 150 202	314 5 L..... 242 60 L.....	150 kg..... 60 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	40, 85
1,2-Butylene oxide, stabilized		3 UN3022	II LIQUID.	.....	.....	.....	.....	.....	.....	.....	.....
Butyl ethers, see Diethyl ethers .....		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (8) (S17c)		Quantity limitations (9)		Vessel stowage requirements (10)	
							(6)	(7)	(8A)	(8B)	(9A)	(9B)
(1)	<i>Butyl ethyl ether, see Ethyl butyl ether</i> n-Butyl formate	3 Forbid-	UN1128	II FLAMMABLE LIQUID.	T1 -	150	202	242	5 L	60 L	1.3	1
	<i>tert-Butyl hydroperoxide, more than 90 per cent with water.</i> <i>tert-Butyl hydroperoxide, more than 72 per cent but not more than 90 per cent with water.</i> <i>tert-Butyl hydroperoxide, not more than 80 per cent in <i>di-tert-butyl</i> peroxide, or <i>tert-Butyl</i> hydroperoxide, not more than 80 per cent in <i>tert-Butyl</i> peroxide and solvent, or <i>tert-Butyl</i> hydroperoxide, not more than 80 per cent in solution.</i> <i>tert-Butyl hydroperoxide, not more than 72 per cent with water.</i>	5.2	UN2094	I ORGANIC PEROXIDE.	.....	None	225	None	1 L	5 L	1	5
	n-Butyl imidazole tert-Butyl isocyanate	5.2	UN2092	I ORGANIC PEROXIDE, FLAMMABLE LIQUID.	.....	None	225	None	1 L	5 L	1	5
	n-Butyl isocyanate	5.2	UN2093	I ORGANIC PEROXIDE, POISON.	T9, T37	None	225	None	1 L	5 L	1	5
	Butyl mercaptan	6.1	UN2690	II FLAMMABLE LIQUID.	T8	None	202	243	5 L	60 L	1.2	12
	n-Butyl methacrylate	3	UN2484	I FLAMMABLE LIQUID. POISON.	10, B14, B30, N26, T8,	None	227	244	Forbidden	Forbidden	1	5
	Butyl methyl ether	3	UN2227	II FLAMMABLE LIQUID.	10, B14, B30, N26, N1, N15, T8, B1, T1	None	227	244	Forbidden	Forbidden	1	5
	tert-Butyl monoperoxymaleate, not more than 55 per cent as a paste.	5.2	UN2350	II FLAMMABLE LIQUID.	T8	150	202	242	5 L	60 L	1.3	1
	tert-Butyl monoperoxymaleate, not more than 55 per cent in solution.	5.2	UN2101	II ORGANIC PEROXIDE.	.....	152	225	None	5 L	10 L	1	5
	tert-Butyl monoperoxymaleate, technically pure.	5.2	UN2100	II ORGANIC PEROXIDE.	.....	152	225	None	5 L	10 L	1	5
	tert-Butyl monoperoxyphthalate, technically pure.	5.2	UN2105	II ORGANIC PEROXIDE.	.....	152	225	None	5 kg	10 kg	1	5
	Butyl nitriles	3	UN2351	II FLAMMABLE LIQUID.	.....	150	202	242	5 L	60 L	1.3	1
	<i>tert-Butyl peroxyacetate, more than 75 per cent in solution.</i> <i>tert-Butyl peroxyacetate, not more than 76 per cent in solution.</i> <i>tert-Butyl peroxyacetate, not more than 52 per cent in solution.</i> <i>tert-Butyl peroxybenzoate, not more than 50 per cent with <i>tert</i>-butybenzoate, not more than 75 per cent in solution.</i>	5.2	UN2095	II ORGANIC PEROXIDE.	.....	152	225	None	Forbidden	Forbidden	1	5
		5.2	UN2096	II ORGANIC PEROXIDE.	.....	152	225	None	5 L	10 L	1	5
		5.2	UN2090	II ORGANIC PEROXIDE.	.....	152	225	None	5 kg	10 kg	1	5
		5.2	UN2095	II ORGANIC PEROXIDE.	.....	152	225	None	5 L	10 L	1	5

(1)	Hazardous materials descriptions and proper shipping names	Identification numbers	Hazard class	Labels	Special provisions	Packaging authorizations (3) (4)		Quantity limitations		Vessel stowage requirements (10)		
						(5)	(6)	(7)	(8A)	(8B)	(10A)	(10B)
	tert-Butyl peroxybenzoate, technically pure or tert-Butyl peroxybenzoate, more than 75 per cent in solution.	5.2	UN2987	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	12, 40
	tert-Butyl peroxybenzoate, not more than 76 per cent in solution.	5.2	UN2183	II ORGANIC PEROXIDE.	152	225	None	5 L.....	10 L.....	1	5	12, 40
	<i>n</i> -Butyl peroxydicarbonate, see Dim-butyl peroxodicarbonate, etc..								Forbidden	Forbidden		
	tert-Butyl peroxydiethylacetate, not more than 33 per cent with tert-Butyl peroxybenzoate, not more than 33 per cent, and solvent.	5.2	UN2551	II ORGANIC PEROXIDE.	152	225	None	5 L.....	10 L.....	1	5	12, 40
	tert-Butyl peroxydiethylacetate, technically pure.	5.2	UN2144	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxy-2-ethylhexanoate, not more than 30 per cent with 2,2-Di(tert-butyl-peroxy) butane, not more than 35 per cent, with not less than 35 per cent phlegmatiser.	5.2	UN2886	II ORGANIC PEROXIDE.	152	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxy-2-ethylhexanoate, not more than 50 per cent with phlegmatiser.	5.2	UN2888	II ORGANIC PEROXIDE.	152	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxy-2-ethylhexanoate, not more than 12 per cent with 2,2-Di(tert-butyl-peroxy) butane, not more than 14 per cent, with not less than 14 per cent phlegmatiser and 60 per cent inert organic solid.	5.2	UN2887	II ORGANIC PEROXIDE.	152	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxy-2-ethylhexanoate, technically pure.	5.2	UN2143	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxyisobutyrate, more than 52 per cent but not more than 77 per cent in solution.	5.2	UN2142	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxyisobutyrate, more than 77 per cent in solution.								Forbidden	Forbidden		
	tert-Butyl peroxyisobutyrate, not more than 52 per cent in solution.	5.2	UN2562	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxyisopropyl carbonate, technically pure.	5.2	UN2108	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	12, 40
	tert-Butyl peroxy isopropyl carbonate, technically pure.	5.2	UN2177	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxyneodecanoate, not more than 77 per cent in solution.	5.2	UN2594	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxyneodecanoate, technically pure.	5.2	UN2596	II ORGANIC PEROXIDE.	152	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	12, 40
	3-tert-Butylperoxy-3-phenylphthalide, technically pure.	5.2	UN2110	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	2, 40
	tert-Butyl peroxyphthalate, not more than 77 per cent in solution.	5.2	UN3047	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	12, 40
	tert-Butylperoxy stearyl carbonate, technically pure.	5.2	UN3062	II ORGANIC PEROXIDE.	None	225	None	225	Passenger aircraft or railcar	Cargo aircraft only	5	5

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica-tion numbers	Pack- ing group	Labels	Special provisions	Packing authorizations (§173...)			Quantity limitations			Other storage provisions (10C)		
							(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)		
(1)	tert-Butyl peroxy-3,5,5-trimethylhexanoate, <i>technically pure.</i> Butyphenols, liquid	5.2	UN2104	II	ORGANIC PEROXIDE. KEEP AWAY FROM FOOD.	..... 77	152	225	None	5 L..... 10 L..... 220 L.....	10 L..... 200 kg..... 220 L.....	1..... 1..... 1.....	5..... 12, 40..... 1,2.....	12, 40..... 34.....
	Butyphenols, solid	6.1	UN2238	III	KEEP AWAY FROM FOOD.	T7, T38	153	203	241	60 L..... 240	100 kg..... 200 kg.....	1,2..... 1,2.....	1,2..... 34.....	34.....	
	<i>Butyl phosphoric acid, see Butyl acid phos- phate.</i> Butylpropionate	6.1	UN2229	III	FLAMMABLE LIQUID. KEEP AWAY FROM FOOD.	T1	150	203	242	60 L..... 241	60 L..... 220 L.....	1,3..... 1..... 1,2.....	1,3..... 22, 25..... 1,2.....	22, 25..... 34.....	
	Butyl toluenes	3	UN1914	III	FLAMMABLE LIQUID. KEEP AWAY FROM FOOD.	T2	153	203	241	60 L..... 242	220 L..... 30 L.....	1..... 1.....	1,2..... 1,2, 40, 77.....	21, 40, 77.....	
	Butyltrichlorosilane	6.1	UN2667	II	CORROSIVE..... B2, B6, N16, N26, N34, TB, T26, B2, B6, N16, N26, N34, TB, T26,	None	202	242	Forbidden.....	1.....	1.....	1.....	1.....
	5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylene). Butyl vinyl ether, inhibited	4.1	UN2956	III	FLAMMABLE SOLID. FLAMMABLE LIQUID. FLAMMABLE SOLID.	..... 77	150	202	242	5 L..... 240	100 kg..... 200 kg.....	1,3..... 1,2..... 1,2, 70.....	1,3..... 1,2, 70..... 1,2, 40.....	12, 25, 48..... 1,2, 40..... 52, 53, 61, 70.....
	1,4-Butynediol	6.1	UN2716	III	FLAMMABLE SOLID. FLAMMABLE LIQUID.	A1	None	213	240	242	5 L..... 242	100 kg..... 200 kg.....	1,3..... 1,3.....	1,3..... 1,3.....	52, 53, 61, 70.....
	Butyraldehyde	3	UN1129	II	FLAMMABLE LIQUID.	T8	150	202	242	5 L..... 242	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Butyraldime	3	UN2840	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L..... 241	5 L..... 241	60 L..... 60 L.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Butyric acid	8	UN2620	III	CORROSIVE..... CORROSIVE..... FLAMMABLE	T1	154	203	241	5 L..... 241	5 L..... 243	60 L..... 60 L.....	1,3..... 1,3.....	12..... 12.....	
	Butyric anhydride	8	UN2759	II	LIQUID, POISON.	T2	154	203	241	5 L..... 243	1 L..... 243	60 L..... 60 L.....	1,2..... 1,2.....	1,2, 40.....	
	Butyronitrile	3	UN2411	II	FLAMMABLE LIQUID, CORROSIVE.	T4	None	202	243	243	1 L..... 5 L.....	60 L..... 5 L.....	1,3..... 1,3.....	1,3, 12..... 1,2, 40.....	
	Butyl chloride	3	UN2353	II	.....	T9, T26	None	202	243	1 L..... 5 L.....	.....	1..... 1.....	1..... 1.....	13, 25, 40.....
	<i>Carbazide.</i>	Forbid- den	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Cacodylic acid	6.1	UN1572	II	POISON..... POISON.....	..... .....	None	212	242	25 kg..... 5 kg.....	100 kg..... 50 kg.....	100 kg..... 100 kg.....	1,2..... 1,2.....	5..... 95.....
	Cadmium compounds, except Cadmium <i>selenide and Cadmium sulfide.</i>	6.1	UN2570	II	POISON..... KEEP AWAY FROM FOOD. DANGEROUS WHEN WET.	..... .....	None	212	242	25 kg..... 100 kg.....	100 kg..... 200 kg.....	100 kg..... 100 kg.....	1,2..... 1,2.....	95..... 34.....
	Calcium or Calcium alloys	4.3	UN1401	II	POISON..... POISON.....	..... .....	None	212	241	15 kg..... 242	50 kg..... 25 kg.....	1,3..... 1,2.....	5..... 95.....	5..... 95.....
	Calcium arsenate	6.1	UN1573	II	POISON..... POISON.....	..... .....	None	212	242	25 kg..... 242	100 kg..... 100 kg.....	1,2..... 1,2.....	1,2..... 95.....	1,2..... 95.....
	Calcium arsenite and calcium arsenite, mixtures, solid	6.1	UN1574	II	POISON.....	.....	None	212	242	25 kg..... 100 kg.....	100 kg..... 100 kg.....	1,2..... 1,2.....	1,2..... 95.....	1,2..... 95.....

Symbol (1)	Hazardous materials descriptions and proper shipping names (2)	Hazard class (3)	Identification numbers (4)	Packing group (5)	Labels (6)	Special provisions (7)	Packaging authorizations (8) §173.4**		Quantity limitations (9)	Vessel storage requirements (10)	Other storage provisions (10C)
							Non-bulk packaging (8A)	Bulk packaging (8B)	Cargo aircraft only (8C)	Pasenger aircraft or railcar (8D)	
Ca lci um bisulfite solution, see Bisulfites, inorganic, aqueous solutions, n.o.s.	4.3 UN1402	II DANGEROUS WHEN WET.	A1, N2, N34, B10, N16, N34,	None 212	241	15 kg.....	50 kg.....	1,3.....	1,3.....	32	
Calcium carbide.....	5.1 UN1452	II OXIDIZER	N34, A1, A19, T8, N34, N34, N41, B10, N13,	152	212	240	5 kg.....	25 kg.....	1,2.....	1,2.....	46, 56
Calcium chlorate solution.....	5.1 UN2429	II OXIDIZER	A2, N34, N41, T8, N34, N34, A1, A19,.....	152	202	242	1 L.....	5 L.....	1,2.....	1,2.....	46, 56
Calcium chloride.....	5.1 UN1453	II OXIDIZER	B10, N13, N79, N80,.....	152	212	240	5 kg.....	25 kg.....	1,2.....	1,2.....	46, 56
Calcium cyanamide with more than 0.1 per cent of calcium carbide.....	4.3 UN1403	III DANGEROUS WHEN WET.	N79, N80,.....	None 213	241	25 kg.....	100 kg.....	1,3.....	1,3.....	26, 40, 95	
Calcium cyanide	6.1 UN1575	I POISON	A19, A20,.....	None 211	242	5 kg.....	50 kg.....	1,2.....	1,2.....	13	
Calcium dithionite or Calcium hydrosulfite	4.2 UN1923	II SPONTANEOUSLY COMBUSTIBLE.	A19,.....	None 212	241	15 kg.....	50 kg.....	1,3.....	5.....	50	
Calcium hydride.....	4.3 UN1404	I DANGEROUS WHEN WET.	A19,.....	None 211	242	Forbidden	15 kg.....	1,3.....	5.....	48, 56	
Calcium hydroxifite, see Calcium dithionite.....	5.1 UN1748	II OXIDIZER	N13, N25, N34,.....	152	212	None 5 kg.....	25 kg.....	1,3.....	5.....	50	
Calcium hypochlorite, dry or Calcium hypochlorite mixtures with more than 39 per cent available chlorine (8.8 per cent available oxygen). Calcium hypochlorite, hydrated or Calcium hypochlorite, hydrated mixtures, with not less than 5.5 per cent but not more than 10 per cent water.	5.1 UN2880	II OXIDIZER	B10,.....	152	212	240	6 kg.....	25 kg.....	1,2.....	1,2.....	50
Calcium manganese silicon	4.3 UN2844	III DANGEROUS WHEN WET.	A1, A19, N34,.....	152	213	240	25 kg.....	100 kg.....	1,2.....	1,2.....	50
Calcium nitrate.....	5.1 UN1454	III OXIDIZER	T2,.....	152	213	240	25 kg.....	100 kg.....	1,2.....	1,2.....	46
Calcium oxide.....	8 UN1910	III CORROSIVE.	.....	154	213	240	25 kg.....	100 kg.....	1,2.....	1,2.....	56, 69
Calcium perchlorate.....	5.1 UN1455	III OXIDIZER	B10, T8,.....	152	212	240	5 kg.....	25 kg.....	1,2.....	1,2.....	13
Calcium permanganate.....	5.1 UN1456	III OXIDIZER	B10,.....	152	212	240	5 kg.....	25 kg.....	1,2.....	1,2.....	40, 85
Calcium peroxide.....	5.1 UN1457	III OXIDIZER	B10,.....	152	212	240	5 kg.....	25 kg.....	1,2.....	1,2.....	50
Calcium phosphide.....	4.3 UN1360	I DANGEROUS WHEN WET.	A19, N2,.....	None 211	242	Forbidden	15 kg.....	1,2.....	5.....	50	
Calcium, pyrophoric or Calcium alloys, pyrophoric.	4.2 UN1865	II SPONTANEOUSLY COMBUSTIBLE.	.....	None 187	None	Forbidden	1.....	5.....	5.....	50	
Calcium resinate.....	4.1 UN1313	II FLAMMABLE SOLID.	A1, A19,.....	213	240	25 kg.....	100 kg.....	1,3.....	1,3.....	50	
Calcium resinate, fused	4.1 UN1314	III FLAMMABLE SOLID.	A1, A19,.....	213	240	25 kg.....	100 kg.....	1,3.....	1,3.....	50	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	Packaging authorizations (§ 173, et seq.)		Quantity limitations (§ 10)	Vessel stowage requirements (§ 10C)	Other stowage provisions	
							(8A)	(8B)				
(1)	Calcium selenate, <i>see</i> Selenates or selenites. Calcium silicide.....	4.3	UN1405	II WHEN WET	DANGEROUS A19.....	None	212	241	15 kg..... 50 kg.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Calcium silicon.....	4.3	UN1406	III WHEN WET	DANGEROUS A1, A19.....	None	213	241	25 kg..... 100 kg.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Camphor oil.....	3	UN1130	III FLAMMABLE LIQUID,	FLAMMABLE B1, T1.....	160	203	242	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Camphor, synthetic.....	4.1	UN2717	III FLAMMABLE SOLID.	A1.....	213	240	25 kg..... 100 kg.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Cannon primers, <i>see</i> Primers, tubular	8	UN2229	III CORROSIVE.....	T1.....	154	203	241	5 L..... 60 L.....	1,2..... 1,2.....	1,2..... 1,2.....	
	Caproic acid.....	1.4S	UN2758	I FLAMMABLE LIQUID,	POISON, LIQUID,	None	201	243	Forbidden..... 30 L.....	1,3..... 5.....	1,3..... 5.....	
	Caps, blasting, <i>see</i> Detonators, etc.	3		II FLAMMABLE LIQUID,	POISON, LIQUID,	None	202	243	1 L..... 60 L.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Caps, toy (Amores)											
	Carbamate pesticides, liquid, toxic, flammable, toxic, n.o.s., flash point less than 23 degrees C.	6.1	UN2991	I POISON, FLAMMABLE LIQUID.	T42.....	None	201	243	1 L..... 30 L.....	1..... 1.....	21,40, 95	
	Carbamate pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.			II POISON, FLAMMABLE LIQUID.	T14.....	None	202	243	5 L..... 60 L.....	1,2..... 1,2.....	21,40, 95	
				III KEEP AWAY FROM FOOD,	B1, T14.....	153	203	242	60 L..... 220 L.....	1,2..... 1,2.....	21,34, 40	
				I POISON,	T42.....	None	201	243	1 L..... 30 L.....	1..... 1.....	40, 95	
				II POISON, KEEP AWAY FROM FOOD.	T14..... T14.....	202	243	5 L..... 60 L.....	1,2..... 1,2.....	40, 95	40, 95	
				III POISON, KEEP AWAY FROM FOOD.	T14.....	153	203	241	60 L..... 220 L.....	1,2..... 1,2.....	34, 40	34, 40
	Carbamate pesticides, solid, toxic, n.o.s.	6.1	UN2992	I POISON, KEEP AWAY FROM FOOD.	T14.....	None	211	242	5 kg..... 25 kg..... 100 kg.....	1,2..... 1,2..... 1,2.....	40, 95	40, 95
				II POISON, KEEP AWAY FROM FOOD.	T14.....	212	242	240	100 kg..... 200 kg.....	1,2..... 1,2.....	40, 95	40, 95
	Carboxylic acid, <i>see</i> Phenol, solid or Phenol, molten.											
	Carboxylic acid solutions, <i>see</i> Phenol solutions.											
	Carbon, activated	4.2	UN1962	III SPONTANE- OUSLY COMBUSTI- BLE.		None	213	241	Forbidden....	1,3.....	12	12
	Carbon, animal or vegetable origin	4.2	UN1961	III SPONTANE- OUSLY COMBUSTI- BLE.		None	213	241	Forbidden....	1,3.....	12	12

Symbol	Hazardous materials descriptions and paper shipping names	Hazard class	Identifica-tion numbers	Pack- ing group	Labels	Special provisions	(6) Packaging authorizations (§173.2)		(9) Quantity limitations		(10) Vessel storage requirements		
							Exception- ations	Non- bulk pack- aging	Bulk pack- aging	Cargo aircraft only	Cargo vessel	Pas- enger vessel	Other storage provisions
(1)	Caustic potash, see Potassium hydroxide etc. Caustic soda, (etc.) see Sodium hydroxide etc. Celluloid, in blocks, rods, rolls, sheets, tubes, etc. (except scrap). Celluloid, scrap	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8A)	(9A)	(10B)	(10C)
D	Cement, see Adhesives containing flammable liquid. Cerium, crude, compact form	4.1	UN1333	II	FLAMMABLE SOLID.	N34.....	None	212	240	15 kg.....	50 kg.....	1.3.....	5.....
D	Cerium, crude, compact form	4.1	UN1333	III	FLAMMABLE SOLID.	A1	None	213	240	25 kg.....	100 kg.....	1.3.....	65, 74.....
D	Cesium.....	4.3	UN1407	I	DANGEROUS WHEN WET.	A19, A22, N34.....	None	211	242	ForbIDDEN.....	15 kg	1	5
D	Cesium hydroxide.	8	UN2682	II	CORROSIVE.....	154	212	240	15 kg.....	50 kg.....	1.2.....	1.2.....	1.2.....
D	Cesium hydroxide solution	8	UN2691	II	CORROSIVE.....	B2, T8.....	154	202	242	1 L.....	30 L.....	1.2.....	1.2.....
D	Cesium nitrate.....	5.1	UN1451	III	OXIDIZER.....	A1, A29.....	152	213	240	25 kg.....	100 kg.....	1.2.....	1.2.....
D	Charcoal briquettes, shell, screenings, wood, etc.	4.2	NA1361	III	FLAMMABLE SOLID.	B10	151	240	240	25 kg.....	100 kg.....	1.3.....	1.3.....
D	Charged well casing jet perforating gun (total explosive contents in guns 20 pounds or more per motor vehicle).	1.1D	NA0059	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charged well casing jet perforating gun (total explosive contents in guns not exceeding 20 pounds per motor vehicle or special offshore down hole tool palette).	1.4D	NA0440	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, demolition .....	.....	.....	.....	.....	.....	1.1D UN0448 1.1D UN0056 .....	.....	.....	.....	.....	.....	.....
D	Charges, expelling, explosive, for fire extinguishers, see Cartridges, power device.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, explosive, commercial without detonator.	1.1D	UN0442	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, explosive, commercial without detonator.	1.2D	UN0443	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, explosive, commercial without detonator.	1.4D	UN0444	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, explosive, commercial without detonator.	1.4S	UN0445	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, propelling for cannon	1.2C	UN0414	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, propelling, for cannon	1.3C	UN0242	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, propelling, for rocket motors	1.1C	UN0279	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, propelling, for rocket motors	1.3C	UN0271	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, propelling, for rocket motors	1.2C	UN0272	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Charges, propelling, for rocket motors	1.2C	UN0415	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D	Composite mixture.	.....	.....	.....	.....	.....	1.1C UN0273	.....	.....	.....	.....	.....	.....

(1)	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(8) Packaging authorizations §173...		(9) Quantity limitations		(10) Vessel stowage requirements	
							(6A)	(6B)	(8C)	(9A)	(10A)	(10B)
D	Chlorine azide.....	Forbid-den	5.1 NA191	II	OXIDIZER, POISON.	.....	None	229	Non- bulk packag- ings	Forbidden ...	5.....	5.....
	Chlorine dioxide hydrate, frozen.....	Forbid-den	2.3 UN2548	I	POISON GAS, OXIDIZER, CORROSIVE.	10.....	None	304	Bulk packag- ings	Forbidden ...	1.....	5.....
	Chlorine pentafluoride.....	.....	2.3 UN1749	I	POISON GAS, OXIDIZER,	10, B7	None	304	245	Forbidden ...	1,3.....	5.....
	Chlorine trifluoride.....	.....	5.1 UN1462	II	OXIDIZER, OXIDIZER, CORROSIVE.	N26, N34, TB.....	152	212	240	5 kg.....	1,2.....	34, 40, 95
	Chlorites, inorganic, n.o.s.....	.....	6.1 UN2232	II	POISON, CORROSIVE, POISON.	T17.....	None	202	243	5 L.....	1.....	46, 56
	Chloroacetaldehyde.....	.....	8 UN1750	I	POISON, CORROSIVE,	B8, B14, B32, N26, N34, N34, 10.....	None	227	244	Forbidden ...	12.....	6.....
	Chloroacetic acid, liquid.....	.....	8 UN1751	II	CORROSIVE.....	N1, N26, N34, 10, B14, B30,	None	212	242	15 kg.....	12.....	40
	Chloroacetic acid, solid.....	.....	6.1 UN1685	I	POISON.....	N12, N12, N32, N34,	None	227	244	Forbidden ...	1.....	5.....
	Chloracetone, stabilized.....	.....	6.1 UN2668	I	POISON.....	B14, B32, 10,	None	227	244	Forbidden ...	1,3.....	40, 95
	Chloracetone (unstabilized).....	.....	6.1 UN1687	I	POISON.....	B14, B30, N1, N12, N16, N17, N32, N33, 10,	None	226	244	Forbidden ...	1.....	5.....
	Chloroacetophenone (CN), liquid.....	.....	8 UN1752	II	CORROSIVE.....	B2, B8, N1, N11, N26, N34, T9, T26,	None	202	242	Forbidden ...	1.....	12, 21, 25, 26, 40, 95
	Chloroacetyl chloride.....	.....	6.1 UN2019	II	POISON.....	T14.....	None	202	243	5 L.....	1.....	40
	Chloroanilines, liquid.....	.....	6.1 UN2018	II	POISON.....	T14, T38.....	None	212	242	100 kg.....	12.....	95
	Chloroanilines, solid.....	.....	.....	.....	.....	.....	.....	.....	.....	60 L.....	12.....	12.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica-tion numbers	Pack-ing group	Labels	Special provisions	Packaging authorizations (§ 173.***)			Quantity limitations (§ 173.10)			Vessel stowage requirements (§ 173.10)	
							(8A)	(8B)	(8C)	Passenger aircraft or railcar	Cargo aircraft only	Cargo vessel		
(1)	Chloronitrotoluenes, liquid.....	(2)	(3)	(4)	(5)	(6)	III KEEP AWAY FROM FOOD.	153	203	241	60 L.....	220 L.....	1.2.....	1.2.....
	Chloronitrotoluenes, solid.....	6.1	UN2433	III KEEP AWAY FROM FOOD.			153	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....	
	Chloropentafluorethane (F-117).....	2.2	UN1020	NONFLAMMA-BLE GAS.	B51		306	304	314	75 kg.....	150 kg.....	1.3.....	1.3.....	
	3-Chloroperoxybenzoic acid, not more than 86 per cent with 3-chlorobenzoic acid.	5.2	UN2755	I ORGANIC PEROXIDE.		None	225	None	None	Forbidden	Forbidden	1.....	5.....	
	3-Chloroperoxybenzoic acid, not more than 57 per cent with water and 3-Chlorobenzoic acid.	5.2	UN3081	I ORGANIC PEROXIDE.		None	225	None	None	Forbidden	Forbidden	1.....	5.....	
	Chlorophenates, liquid.....	8	UN2904	II CORROSIVE			154	203	241	5 L.....	60 L.....	1.2.....	1.2.....	
	Chlorophenates, solid.....	8	UN2805	III CORROSIVE			154	213	240	25 kg.....	100 kg.....	1.2.....	1.2.....	
	Chlorophenols, liquid.....	6.1	UN2021	III KEEP AWAY FROM FOOD.	T7		153	203	241	60 L.....	220 L.....	1.2.....	1.2.....	
	Chlorophenols, solid.....	6.1	UN2020	III KEEP AWAY FROM FOOD.	T7		153	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....	
	Chlorophenyl trichlorosilane.....	8	UN1753	II CORROSIVE	B2, B6,	None	202	242	None	Forbidden	30 L.....	1.....	1.....	
	Chloropicrin.....	6.1	UN1560	I POISON	T8, T26, N16, N26, N34,	None	227	244	None	Forbidden	1.....	5.....	40, 95	
	Chloropicrin and methyl bromide mixtures.....	2.3	UN1581	I POISON GASS	B13, B14, B31, 10,	None	193	244	None	Forbidden	1.....	5.....	25, 40, 95	
	Chloropicrin and methyl chloride mixtures.....	2.3	UN1582	I POISON GAS	B13, B14, B31, 10,	None	193	244	None	Forbidden	1.....	5.....	25, 40, 95	
	Chloropicrin mixture, flammable (pressure not exceeding 14.7 psia at 115 degrees F flash point below 100 deg F) see Poison liquids, flammable, n.o.s., Chloropicrin mixtures, n.o.s.....	6.1	UN1583	I POISON	B14, B32, 10,	None	227	244	None	Forbidden	1.....	1.....	40, 95	
	Chloropivaloyl chloride.....	6.1	NA2810	II POISON	B14, B32, 10,	None	201	243	None	Forbidden	1.....	1.....	40, 85	
	Chloroplatinic acid, solid.....	8	UN2507	III CORROSIVE FLAMMABLE LIQUID, POISON.	T15.....	None	154	213	240	25 kg.....	100 kg.....	1.2.....	1.2.....	
	Chloroprene, inhibited.....	3	UN1891	II KEEP AWAY			201	243	None	Forbidden	30 L.....	1.3.....	12, 40	
	2-Chloropropane.....	6.1	UN2848	II KEEP AWAY			153	203	241	30 L.....	1.3.....	5.....	12	
	3-Chloropropanol-1.....									220 L.....	1.2.....	1.2.....	34	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Packaging group	Labels	Special provisions	(8) Packaging authorizations		(9) Limitations		(10) Vessel storage requirements	
						(5)	(6)	(7)	(8A)	(8B)	(8C)
(1)	2-Chloropropane.....	3	UN2456	I FLAMMABLE LIQUID.	N1, N15, N36, T14.....	150	201	243	1 L.....	30 L.....	1,3.....
	alpha-Chloropropionic acid.....	8	UN2511	III CORROSIVE.....	T8.....	154	203	241	5 L.....	60 L.....	1,2.....
	2-Chloropyridine.....	6.1	UN2822	II POISON.....	T14.....	None	202	243	5 L.....	60 L.....	1,2.....
	Chlorosilanes, n.o.s.....	8	UN2887	II CORROSIVE.....	B2.....	154	202	242	1 L.....	30 L.....	1.....
	Chlorosilanes, n.o.s., flash point less than 29 degrees C.....	3	UN2885	I FLAMMABLE LIQUID.	.....	None	201	243	0.5 L.....	2.5 L.....	1,3.....
	Chlorosilanes, n.o.s., flash point not less than 29 degrees C.....	8	UN2886	II CORROSIVE.....	.....	None	202	243	1 L.....	30 L.....	1,3.....
	Chlorosilanes, n.o.s., which in contact with water emit flammable gas.....	4.3	UN2988	I DANGEROUS WHEN WET, FLAMMABLE LIQUID.	A2.....	.....	201	244	Forbidden.....	1 L.....	1.....
	Chlorosulfonic acid (with or without sulfur trioxide).	8	UN1754	I CORROSIVE.....	B4, N1, N11, N35, T12, T27, B51.....	None	201	242	.5 L.....	2.5 L.....	1.....
	Chlortetrafluoroethane (R-124).....	2.2	UN1021	NONFLAMMABLE GAS.	.....	306	304	314,	75 kg.....	150 kg.....	1,3.....
	Chlorotoluenes.....	3	UN2238	III FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	220 L.....	1,3.....
	4-Chloro-o-toluidine hydrochloride.....	6.1	UN1579	II KEEP AWAY FROM FOOD.	.....	153	213	241	100 kg.....	200 kg.....	1,2.....
	Chlorotoluidines, liquid.....	6.1	UN2239	III KEEP AWAY FROM FOOD.	T7.....	153	203	241	60 L.....	220 L.....	1,2.....
	Chlorotoluidines, solid.....	6.1	UN2239	III KEEP AWAY FROM FOOD.	.....	153	213	240	100 kg.....	200 kg.....	1,2.....
	Chlorotifluoroethane.....	2.2	UN1983	NONFLAMMABLE GAS.	.....	306	304	314,	75 kg.....	150 kg.....	1,3.....
	Chlorotrifluoromethane (R-12).....	2.2	UN1022	NONFLAMMABLE GAS.	.....	306	304	315	75 kg.....	150 kg.....	1,3.....
	Chlorotrifluoromethane and trifluoromethane azotropic mixture with approximately 60 per cent chlorotrifluoromethane.	2.2	UN2599	NONFLAMMABLE GAS.	.....	306	304	314,	75 kg.....	150 kg.....	1,3.....
D	Chromic acid, solid.....	5.1	NA1463	II OXIDIZER, CORROSIVE.	.....	None	212	240	5 kg.....	25 kg.....	1,2.....
	Chromic acid solution.....	8	UN1755	II CORROSIVE.	B2, T9, T27.	154	202	242	1 L.....	30 L.....	1.....
	Chromic anhydride, see Chromium trioxide, anhydrous.	8	UN1756	II CORROSIVE.	.....	154	212	240	15 kg.....	50 kg.....	1,2.....
	Chromic fluoride, solid.....	8	UN1757	II CORROSIVE.	.....	154	202	242	1 L.....	30 L.....	1,2.....
	Chromic fluoride, solution.....	5.1	UN2720	III OXIDIZER.	.....	152	213	240	25 kg.....	100 kg.....	1,2.....

Hazardous materials descriptions and proper shipping names		Identification numbers	Packing group	Labels	Special provisions	Packing authorizations (B) (B7c,***)		Quantity limitations (G)		Vessel stowage requirements (H)			
						(8A)	(8B)	(8C)	(8D)	(8E)	(8F)	(8G)	
D	Combustible liquid, n.o.s. Components, explosive train, n.o.s..... Components, explosive train, n.o.s..... Components, explosive train, n.o.s..... Composition B, see Hexolite, etc. Compounds, cleaning liquid, corrosive, see Corrosive liquids, n.o.s. Compounds, cleaning liquid, flammable, see Flammable liquid preparations, etc. Compressed or liquefied gases, flamma- ble, n.o.s.	3 1.2B 1.4B 1.4S	NA1993 UN0382 UN0383 UN0384	III None.....	(4) (5) (6)	(7)	150	203	241	60 L..... 220 L.....	1.3..... 1.3.....	(10A) (10B)	
D	Compressed or liquefied gases, flamma- ble, toxic, n.o.s. LC50 less than or equal to 100 ppm. Compressed or liquefied gases, n.o.s..... Compressed or liquefied gases, toxic, n.o.s. LC50 less than or equal to 200 ppm. Compressed or liquefied gases, flammable, n.o.s. LC50 over 1000 up to 5000 ppm. Compressed or liquefied gases, toxic, n.o.s. LC50 over 200 up to 5000 ppm.	2.3 2.2 2.3 2.3 2.3	UN1953 UN1956 UN1955 UN1953 UN1955	I FLAMMABLE GAS. NONFLAMMA- BLE GAS.	B13	POISON GAS, FLAMMABLE GAS. B13.....	10	None 302, 304, 305, 307	244	Forbidden 150 kg..... 150 kg.....	1..... 1..... 1..... 1..... 1.....	5..... 5..... 5..... 5..... 5.....	
D	Consumer commodity	ORM-D	None	II	POISON GAS, FLAMMABLE GAS.	10	None 302, 304, 305, 307	244	Forbidden 150 kg..... 150 kg.....	1..... 1..... 1..... 1.....	5..... 5..... 5..... 5.....	40, 95	
D	Contrivances, water-activated, with burster, expelling charge or propelling charge. Contrivances, water-activated, with burster, expelling charge or propelling charge. Copper acetoarsenite	1.2L 1.3L 6.1 Forbid- den	UN0248 UN0249 UN1955	II POISON.....	156, 306	None 156, 306	242	65 lb gross.. 65 lb gross..	12..... 12.....	1,2..... 1,2.....	95
D	Copper arsenite	6.1 3	UN1586 UN2776	II POISON.....	None None	212 201	242 243	100 kg..... 100 kg.....	1,2..... 1,2.....	1,2..... 1,2.....	95
D	Copper based pesticides, liquid, toxic, flamm- able, n.o.s., flash point less than 23 de- grees C.....	6.1	UN3009	I POISON, FLAMMABLE LIQUID.	None T42.....	202 None	243 1 L.....	100 kg..... 100 kg.....	1,3..... 1,3.....	1..... 1.....	21, 40, 95

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing group	Label*	Special provisions	(8) Packaging authorizations (8173...)		Quantity limitations		Vessel stowage requirements (10)		
							(8A)	(8B)	(8C)	(8D)	(10A)	(10B)	
(1)	Copper based pesticides, liquid, toxic, n.o.s.	6.1	UN3010	II	POISON, FLAMMABLE LIQUID. KEEP AWAY FROM FOOD, FLAMMABLE LIQUID.	T14... B1....	None	202	243	5 L..... 60 L..... 220 L.....	1.2..... 1.2..... 1.2.....	21,40, 95	21,34, 40
	Copper based pesticides, solid toxic, n.o.s.	6.1	UN2775	II	POISON,... KEEP AWAY FROM FOOD.	T14... T14....	None	202	243	1 L..... 5 L..... 60 L..... 220 L.....	1..... 1.2..... 1.2..... 1.2.....	40,95	40,95
	Copper chloride	5.1	UN2721	II	POISON,... KEEP AWAY FROM FOOD.	T14... T14....	None	211	242	5 kg..... 25 kg..... 100 kg..... 200 kg.....	1.2..... 1.2..... 1.2..... 1.2.....	40,95	40,95
	Copper cyanide	6.1	UN2802	II	OXIDIZER,... CORROSIVE.	A1, B10,... T14....	None	212	242	50 kg..... 100 kg..... 200 kg.....	1.2..... 1.2..... 1.2.....	34,40	34,40
	Copper selenite, see Selenates or Selenites.	6.1	UN1587	II	POISON...	T14....	None	213	240	5 kg..... 25 kg..... 100 kg.....	1.2..... 1.2..... 1.2.....	46,56	46,56
	Copper tetramine nitrate,.....	.....	.....	.....	.....	.....	None	204	242	25 kg..... 100 kg.....	1.2..... 1.2.....	26,95	26,95
AW	Copra.....	4.2	UN1363	II	None.....	.....	None	213	241	Forbidden.....	Forbidden.....	1.3..... 1.3.....	13,19
	Cord, detonating, flexible.....	1.1D	UN0065	II	.....	.....	.....	.....	.....	.....	.....	1.....	12,21, 25
	Cord, detonating, flexible.....	1.4D	UN0289	II	.....	.....	.....	.....	.....	.....	.....	1.....	12,21, 25
	Cordeau detonant fuse, see Cord (Fuse),.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.....	12,21, 25
	Detonating, etc.; Cord, detonating, flexible,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.....	12,21, 25
	Cord (Fuse), detonating, metal clad.....	1.2D	UN0102	I	CORROSIVE, FLAMMABLE LIQUID.	B4, N1, N34, T42,	None	201	243	0.5 L.....	2.5 L.....	1.....	12,21, 25
	Cord (Fuse), detonating, metal clad.....	1.1D	UN0280	II	CORROSIVE, FLAMMABLE LIQUID.	B2, T15, T26,	None	202	243	1 L..... 30 L.....	1..... 1.....	1.....	12,21, 25
	Cord, igniter.....	1.4G	UN0066	I	CORROSIVE, CORROSIVE.	B4, N1, N11, N26, N34, T42,	None	201	242	0.5 L..... 2.5 L.....	1..... 1.....	1.....	12,21, 25
	Corofite, see Powder, smokeless.	8	UN2820	II	CORROSIVE, LIQUID.	B2, T14,	None	202	242	1 L..... 30 L.....	1..... 1.....	1.....	12,21, 25
	Corrosive liquids, n.o.s.....	8	UN1760	II	CORROSIVE,	.....	.....	.....	.....	.....	.....	1.....	40

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing group	Labels	Special provisions	(8) Packaging authorizations (HT3, ...)		(9) Quantity limitations		Vessel stowage requirements (10)	
							(8A)	(8B)	(8C)	(8D)	(8E)	
UN2922	Corrosive liquids, poisonous, n.o.s.	8	8	I	CORROSIVE, CORROSIVE, POISON,	77 N1, N1t, N34;	154 None	203 243	246 05 L.....	60 L.....	12.....	40
UN2921	Corrosive solids, flammable, n.o.s.	8	8	II	CORROSIVE, CORROSIVE, CORROSIVE, SOLID.	154 None	203 211	241 242	5 L..... 1 L..... 1 kg.....	25 L..... 30 L..... 60 L.....	1,2..... 1,2..... 1,2.....	40
UN1759	Corrosive solids, n.o.s.	8	8	II	CORROSIVE, COPPER, COPPER, OXIDIZER, OXIDIZER,	154 154 154 None	211 212 211	240 240 240	1 kg..... 15 kg..... 25 kg..... 1 kg.....	25 kg..... 50 kg..... 100 kg..... 25 kg.....	1,2..... 1,2..... 1,2..... 1,2.....	40
UN3084	Corrosive solids, oxidizing, n.o.s.	8	8	II	CORROSIVE, OXIDIZER, OXIDIZER,	154 155 None	212 211	240 242	15 kg..... 1 kg.....	50 kg..... 25 kg.....	1,2..... 1,2.....	40
UN2923	Corrosive solids, poisonous, n.o.s.	8	8	II	CORROSIVE, POISON.	154 155 None	212 213 213	240 240 240	16 kg..... 26 kg..... 50 kg.....	50 kg..... 100 kg..... No limit.....	1,2..... 1,2..... No limit.....	40
NA1385 4.2	Cotton waste, oily	9	9	III	CORROSIVE, CLASS 9 SPONTANEOU- LY COMBUSTI- BLE.	154 None	213	241	16 kg..... None	50 kg..... None	1,2..... None	40
UN1384 4.2	Cotton, wet	4.2	4.2	II	SPONTANE- OUSLY COMBUSTI- BLE.	154 None	213	241	16 kg..... None	50 kg..... None	1,2..... None	40
UN3024	Coumarin derivative pesticides, liquid, flammable, toxic, n.o.s., if <i>flashpoint less than 23 deg C.</i>	3	3	I	FLAMMABLE LIQUID, POISON.	154 None	201 202	243 243	30 L..... 1 L.....	60 L..... 60 L.....	1,3..... 1,3.....	5..... 1.....
UN3025	Coumarin derivative pesticides, liquid, toxic, flammable, n.o.s. <i>if flashpoint not less than 23 deg C.</i>	6.1	6.1	I	POISON, FLAMMABLE LIQUID.	154 None	201 202	243 243	30 L..... 5 L.....	60 L..... 60 L.....	1,2..... 1,2.....	1..... 1.....
				II	KEEP AWAY FROM FOOD, LIQUID.	153 None	203 241	241 60 L.....	220 L.....	1,2..... 1,2.....	1,2..... 1,2.....	21, 40, 95

(1)	Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica-tion numbers	Pack-ing group	Labels	Special provisions	(8) Packaging authorizations (§ 173.103)		(9) Quantity limitations		Vessel stowage requirements (10)	Other stowage provisions (10C)		
								(8A)	(8B)	(8C)	(8D)	(8E)			
D	Coumarin derivative pesticides, liquid, toxic, n.o.s.	6.1	UN3026	I	Poison.....			None	201	243	1 L.....	30 L.....	1	1	40, 95
					II	Poison.....		None	202	243	5 L.....	60 L.....	1.2	1	40, 95
					III	KEEP AWAY FROM FOOD.....		153	203	241	60 L.....	220 L.....	1.2	1.2	34, 40
	Coumarin derivative pesticides, solid, toxic, n.o.s.	6.1	UN3027	I	Poison.....			None	211	242	5 kg.....	50 kg.....	1.2	1.2	
					II	Poison.....		None	212	242	25 kg.....	100 kg.....	1.2	1.2	
					III	KEEP AWAY FROM FOOD.....		153	213	240	100 kg.....	200 kg.....	1.2	1.2	
	Creosote, coal tar.....	3	NA1993	III	FLAMMABLE LIQUID.....			150	203	241	60 L.....	220 L.....	1.3	1.3	
	Cresols (o-,m-,p-).	6.1	UN2076	I	Poison.....	T8.....		None	202	243	5 L.....	60 L.....	1.2	1.2	95
	Cresylic acid.....	6.1	UN2022	II	Poison.....	B14, B32, 10.....		None	202	243	5 L.....	60 L.....	1.2	1.2	
	Crotonaldehyde, stabilized.....	3	UN1143	I	FLAMMABLE LIQUID, POISON.....			None	227	244	Forbidden....	Forbidden....	1.3	1	
	Crotonic acid, liquid.....	8	UN2823	III	CORROSIVE.....	T20.....		154	203	240	5 L.....	60 L.....	1.2	1.2	
	Crotonic acid, solid.....	8	UN2823	III	CORROSIVE.....			154	213	240	25 kg.....	100 kg.....	1.2	1.2	
	Crotoxylen.....	3	UN1144	I	FLAMMABLE LIQUID.....			150	201	243	1 L.....	30 L.....	1.3	1	
	Cumene hydroperoxide, see Cumyl hydroperoxide.....												1.3	1.3	12
	Cumyl hydroperoxide (Cumene hydroperoxide, technically pure, Cumyl peroxynonadecanoate, not more than 77 per cent in solution, Cumyl peroxyphthalate, not more than 77 per cent in solution, Cumyltrimethyleneamine solution.....	5.2	UN2116	I	ORGANIC PEROXIDE.....	B17, B22, T25.....		None	225	243	1 L.....	5 L.....	1	1	12, 40
	Cyanide or cyanide mixtures, d/s, see Cyanides, inorganic, n.o.s., Cyanides, inorganic, n.o.s.....	6.1	UN1588	I	Poison.....	N74, N75.....		None	211	242	5 kg.....	50 kg.....	1.2	1.2	26, 95
	Cyanide solutions.....	6.1	UN1935	II	Poison.....	N74, N75, B37, T18, T26.....		None	212	242	25 kg.....	100 kg.....	1.2	1.2	26, 95
					III	KEEP AWAY FROM FOOD.....		None	201	243	1 L.....	30 L.....	1.2	1.2	26, 40,
	Gyanogen bromide.....	6.1	UN1889	I	Poison, CORROSIVE.....	T18, T26.....		153	203	241	60 L.....	220 L.....	1.2	1.2	26, 40
	Cyanogen chloride.....	2.3	UN1589	I	Poison GAS, FLAMMABLE GAS.....	N2, N1, 10.....		None	211	244	Forbidden....	Forbidden....	1	1	20, 25, 40, 95
								None	192	245	Forbidden....	Forbidden....	1	1	40, 95

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(2) Authorizations (§ 173...)		Quantity limitations	Vessel stowage requirements		
							(B)	(C)	Pas- senger aircraft only	Cargo aircraft only	Pas- senger vessel	Other stowage provisions (10C)
(1)	Cyanogen, liquefied	2.3	UN1626	I	POISON GAS, FLAMMABLE GAS. CORROSIVE.	10.....	None	192	245	Forbidden.....	5.....	34, 40
	Cyanuric chloride.	8	UN2670	III	FLAMMABLE GAS.	.....	None	213	240	25 kg.....	100 kg.....	12, 40
	Cyanure triazide.	2.1	UN2601	II	POISON, FLAMMABLE GAS.	.....	None	306	314,	Forbidden.....	150 kg.....	40, 85
	Cyclobutane.	6.1	UN2744	II	POISON, CORROSIVE.	T18.....	None	202	243	1 L.....	30 L.....	12, 13, 23, 25, 40, 95
	Cyclobutylchloroformate	6.1	UN2518	III	KEEP AWAY FROM FOOD.	T7.....	153	203	241	60 L.....	220 L.....	12.....
	i,5,9-Cyclododecathene	3	UN2241	II	FLAMMABLE LIQUID.	T1.....	None	202	242	5 L.....	60 L.....	1, 3.....
	Cycloheptane.	3	UN2603	II	FLAMMABLE LIQUID.	T14.....	None	202	243	1 L.....	60 L.....	1, 3.....
	Cycloneptatriene.	3	UN2242	II	POISON, FLAMMABLE LIQUID.	T7.....	150	202	241	5 L.....	60 L.....	1, 3.....
	Cycloheptene.	3	UN1145	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	1, 3.....
	Cyclohexane.	3	UN1915	III	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	220 L.....	1, 3.....
	Cyclohexanone.	5.2	UN2117	I	ORGANIC PEROXIDE.	.....	None	225	None	Forbidden.....	1.....	12, 40
	Cyclohexanone peroxide(s). (1-Hydroxy-1'-hydroperoxy dicyclohexyl peroxide, technically pure, or 1-hydroxy-1'-hydroperoxy dicyclohexyl peroxide and Di-(1-hydroxy cyclohexyl) peroxide mixtures), more than 90 per cent with water with not more than 9 percent available oxygen.	5.2	UN2119	I	ORGANIC PEROXIDE.	.....	None	225	None	5 kg.....	1.....	12, 40
	Cyclohexane peroxide(s). (1-Hydroxy-1'-hydroperoxy dicyclohexyl peroxide, technically pure, or 1-hydroxy-1'-hydroperoxy dicyclohexyl peroxide and Di-(1-hydroxy cyclohexyl) peroxide mixtures), not more than 90 per cent with water with not more than 9 percent available oxygen.	5.2	UN2896	II	ORGANIC PEROXIDE.	.....	152	225	None	5 kg.....	1.....	12, 40
	Cyclohexane peroxide(s), not more than 72 per cent as a paste with not more than 9 per cent available oxygen.	5.2	UN2118	I	ORGANIC PEROXIDE.	.....	None	225	None	5 kg.....	1.....	12, 40
	Cyclohexane peroxide(s), not more than 72 per cent in solution with not more than 9 per cent available oxygen.	3	UN2256	II	FLAMMABLE LIQUID.	T7.....	150	202	242	60 L.....	1, 3.....	12

Symbol	Hazardous materials descriptions and proper shipping names	Identification numbers	Hazard class	Packing group	Labels	Special provisions	Packaging authorizations		Quantity limitations		Vessel stowage requirements	Other stowage provisions		
							(8)	(9)	(8A)	(8B)	(8C)			
(1)	2-Diazo-1-naphthol-4-sulpho-chloride..... 2-Diazo-1-naphthol-5-sulpho-chloride	4.1 4.1	UN3042 UN3043	II II	FLAMMABLE SOLID. FLAMMABLE SOLID.	..... .....	None None	212 212	None None	Forbidden Forbidden	1..... 1.....	5..... 5.....	25 25	
D	Diazonium nitrates (dry)..... Diazonium perchlorates (dry)	Forbid-den Forbid-den Forbid-den	5.2	UN2088	1	ORGANIC PEROXIDE.	.....	225	None	Forbidden	1.....	5.....	12, 40	
D	1,3-Diazopropane..... Dibenzoyl peroxide (Benzoyl peroxide), more than 77 per cent but less than 95 per cent with water. Dibenzoyl peroxide (Benzoyl peroxide), not less than 30 per cent but not more than 52 per cent with inert solid.	Forbid-den Forbid-den Forbid-den	5.2	UN2089	II	ORGANIC PEROXIDE.	.....	152	225	None	25 kg.....	1.....	12, 40	
D	Dibenzoyl peroxide (Benzoyl peroxide), not more than 72 per cent as a paste. Dibenzoyl peroxide (Benzoyl peroxide), not more than 77 per cent with water.	Forbid-den Forbid-den	5.2	UN2087	II	ORGANIC PEROXIDE.	.....	152	225	None	25 kg.....	1.....	12, 40	
D	Dibenzoyl peroxide (Benzoyl peroxide), not more than 77 per cent with water.	Forbid-den	5.2	UN2090	II	ORGANIC PEROXIDE.	.....	152	225	None	5 kg.....	10 kg.....	12, 40	
D	Dibenzoyl peroxide (Benzoyl peroxide), technically pure, or Dibenzoyl peroxide (Benzoyl peroxide), more than 52 per cent with inert solid.	Forbid-den	5.2	UN2085	1	ORGANIC PEROXIDE.	.....	None	225	None	Forbidden	1.....	5.....	12, 40
D	Dibenzylidichlorosilane..... Dibenzyl peroxydicarbonate, more than 87 per cent with water.	Forbid-den Forbid-den	8 5.2	UN2434 UN2149	II	CORROSIVE.	154 10	202 302	1L..... None	30 L..... Forbidden	1..... <td>1.....</td> <td>40 2, 40</td>	1.....	40 2, 40
D	Dibenzyl peroxydicarbonate, not more than 87 per cent with water.	Forbid-den	2.3	UN1911	1	ORGANIC PEROXIDE.	.....	None	302	245	Forbidden	1.....	6.....	40, 57, 74, 95
D	Diborane mixtures	Forbid-den	2.3	NA1911	1	POISON GAS, FLAMMABLE GAS.	.....	None	302	245	Forbidden	1.....	5.....	40, 57, 74, 95
D	Dibromacetylene..... Dibromobenzene	Forbid-den	3	UN2711	III	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	220 L.....	1, 3.....	1, 3.....
A	1,2-Dibromobutan-3-one..... Dibromochloropropane	Forbid-den	6.1 6.1	UN2648 UN2872	IV III	POISON, KEEP AWAY FROM FOOD.	..... T7.....	None 153	202 203	243 241	5 L..... 60 L.....	60 L..... 220 L.....	1, 2..... 1, 2.....	40, 95 34
A	Dibromodifluoromethane..... 1,2-Dibromoethane, see Ethylene dibromo- mide.	Forbid-den	9	UN1941	III	CLASS 9.....	T13.....	155	203	241	100 L.....	220 L.....	1, 2..... 1, 2.....	25, 34
D	Dibromomethane.....	Forbid-den	6.1	UN2664	III	KEEP AWAY FROM FOOD.	.....	153	203	241	60 L.....	220 L.....	1, 2..... 1, 2.....	34

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Hazardous material numbers	Pack- ing group	Labels	Special provisions	Packaging authorizations (§ 173...)		Quantity limitations		Vessel stowage requirements (11)
							(8)	(9)	(8A)	(8B)	
(1)	Di-n-butylamine	(2)	8 UN2248	II	CORROSIVE, FLAMMABLE LIQUID. KEEP AWAY FROM FOOD.	None	202	243	1 L.....	30 L.....	1,2.....
	Dibutylaminooethanol	6.1 UN2873	III	T1	ORGANIC PEROXIDE.	None	203	241	60 L.....	220 L.....	1,2.....
	Di-4-tert-butyl(cyclohexyl) peroxydicarbonate, not more than 42 per cent, stable dispersion, in water.	5.2 UN2884	II			None	225	None	Forbidden....	1	5
	Di-4-tert-butyl(cyclohexyl) peroxydicarbonate, technically pure.	5.2 UN2154	II	B1, T1	ORGANIC PEROXIDE, FLAMMABLE LIQUID.	None	225	None	Forbidden....	1	5
	Dibutyl ethers	3 UN1148	III		ORGANIC PEROXIDE, FLAMMABLE LIQUID.	150	203	24P	60 L.....	220 L.....	1,3.....
	Di-tert-butyl peroxide (tert-Butyl-peroxide), technically pure.	5.2 UN2162	II			152	225	None	1 L.....	5 L.....	1
	2,2-Di-(tert-butylperoxy) butane, more than 55 per cent in solution.	5.2 UN2111	II		ORGANIC PEROXIDE, ORGANIC PEROXIDE.	152	225	None	5 L.....	10 L.....	1
	2,2-Di-(tert-butylperoxy) butane, not more than 55 per cent in solution.	5.2 UN2885	II			152	225	None	5 kg.....	10 kg.....	1
	1,1-Di-(tert-butylperoxy) cyclohexane, not more than 40 per cent with inert organic solid with not less than 13 per cent in plasticizer.	5.2 UN2887	II		ORGANIC PEROXIDE, ORGANIC PEROXIDE.	152	225	None	5 L.....	10 L.....	1
	1,1-Bi-(tert-butylperoxy) cyclohexane, not more than 50 per cent with plasticizer.	5.2 UN3069	II			None	225	None	5 L.....	10 L.....	1
	1,1-Di-(tert-butyl peroxy) cyclohexane, not more than 25% in solution with not less than 35% different type B.	5.2 UN2180	II		ORGANIC PEROXIDE, ORGANIC PEROXIDE.	None	225	None	Forbidden....	1	5
	1,1-Di-(tert-butylperoxy) cyclohexane, not more than 77 per cent in solution.	5.2 UN2179	II			None	225	None	Forbidden....	1	5
	1,1-Di-(tert-butylperoxy) cyclohexane, technically pure.	5.2 UN2169	II		ORGANIC PEROXIDE.	None	225	None	Forbidden....	1	5
	Di-n-butyl peroxydicarbonate, more than 52 per cent in solution.	5.2 UN2169	II		ORGANIC PEROXIDE.	None	225	None	Forbidden....	1	5
	Di-n-butyl peroxydicarbonate, not more than 52 per cent in solution.	5.2 UN2170	II		ORGANIC PEROXIDE.	None	225	None	Forbidden....	1	5
	Di-n-butyl peroxydicarbonate, not more than 27 per cent in solution.	5.2 UN2151	II		ORGANIC PEROXIDE.	None	225	None	Forbidden....	1	5
	Di-sec-butyl peroxydicarbonate, not more than 52 per cent in solution.	5.2 UN2150	I		ORGANIC PEROXIDE.	None	225	None	Forbidden....	1	5

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Pack-ing group	Labels	Special provisions	(E) Packaging authorizations (§ 173.***)		Quantity limitations (g)	Vessel stowage requirements (10)
							Exceptions (§ 173.***)	Bulk bulk packag-ing ing	Passenger aircraft only	
(1)	1,4-Di[(tert-butylperoxyisopropyl)] benzene, technically pure or more than 40 percent with inert solid or 1,3-Di[(2-tert-butylperoxyisopropyl)benzene and 1,3-Di[(2-tert-butylperoxyisopropyl)]benzene mixtures, technically pure or more than 40 percent with inert solid.	5.2	UN2112	II	ORGANIC PEROXIDE.		152	225	None	10 kg..... 25 kg..... 1.....
	Di(tert-butylperoxy) phthalate, more than 55 per cent in solution.	5.2	UN2108	II	ORGANIC PEROXIDE.		152	225	None	10 kg..... 10 L..... 1.....
	Di(tert-butylperoxy) phthalate, not more than 55 per cent as a paste.	5.2	UN2107	II	ORGANIC PEROXIDE.		152	225	None	10 L..... 1.....
	Di(tert-butylperoxy) phthalate, not more than 55 per cent in solution.	5.2	UN2106	II	ORGANIC PEROXIDE.		None	225	None	Forbidden....
	Di(tert-butylperoxy) phthalate, technically pure.	5.2	UN2884	II	ORGANIC PEROXIDE.		152	225	None	10 kg..... 10 kg..... 1.....
	2,2-Di(tert-butylperoxy) propane, not more than 40 per cent with inorganic inert solid with not less than 13 per cent phlegmizer.	5.2	UN2883	II	ORGANIC PEROXIDE.		152	225	None	5 L..... 10 L..... 1.....
	2,2-Di(tert-butylperoxy) propane, not more than 50 per cent with phlegmizer.	5.2	UN2146	II	ORGANIC PEROXIDE.		152	225	None	5 L..... 10 L..... 1.....
	1,1-Di(tert-butylperoxy)3,3,5-trimethyl cyclohexane, not more than 57 per cent in solvent.	5.2	UN2147	II	ORGANIC PEROXIDE.		152	225	None	5 kg..... 10 kg..... 1.....
	1,1-Di(tert-butylperoxy)3,3,5-trimethyl cyclohexane, not more than 58 per cent with inert solid.	5.2	UN2145	II	ORGANIC PEROXIDE.		152	225	None	Forbidden....
	Dicyclohexyl peroxycarbonate, not more than 42 per cent stable dispersion, in water.	5.2	UN2895	II	ORGANIC PEROXIDE.		None	225	None	Forbidden....
	Dicyclohexyl peroxycarbonate, technically pure.	5.2	UN2164	II	ORGANIC PEROXIDE.		None	225	None	Forbidden....
	N,N'-Dichlorazodicarbonamide (salts of) (dry).	8	UN1764	II	CORROSIVE.	B2, N1, N11, N26, N34, T8, T27.	154	202	242 L..... 30 L.....	1.2..... 1.2.....
	Dichloroacetic acid.	6.1	UN2649	II	POISON.		None	212	243	25 kg..... 100 kg.....
	1,3-Dichloroacetone.	8	UN1765	II	CORROSIVE.	B2, B6, N1, N11, N26, N34, T8, T26.	154	202	242 L..... 30 L.....	1.3..... 1.3.....
	Dichloroacetyl chloride.									12,40, 95 40
	Dichloroacetylene.									1..... 5.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(8) Packaging authorizations		(9) Quantity limitations		Vessel stowage provisions (10)
							(6)	(7)	(8A)	(8B)	
D	Dichloroarilines.....	6.1	UN1590	II	POISON.....	T14.....	None	202	242	5 L.....	1.2.....
	α -Dichlorobenzene.....	6.1	UN1591	III	KEEP AWAY FROM FOOD.	T7	153	203	241	60 L.....	1.2.....
	P-Dichlorobenzene.....	6.1	UN1592	III	KEEP AWAY FROM FOOD.	.....	153	213	240	100 kg.....	1.2.....
	Di-4-chlorobenzoyl peroxide (p-Chlorobenzoyl peroxide), not more than 52 percent as a paste.	5.2	UN2114	II	ORGANIC PEROXIDE.	.....	152	225	None	5 kg.....	1.....
	Di-4-chlorobenzoyl peroxide (p-Chlorobenzoyl peroxide), not more than 52 percent in solution.	5.2	UN2115	II	ORGANIC PEROXIDE.	.....	152	225	None	10 kg.....	1.....
	Di-4-chlorobenzoyl peroxide (p-Chlorobenzoyl peroxide), not more than 75 percent with water.	5.2	UN2113	II	ORGANIC PEROXIDE.	.....	152	225	None	10 kg.....	1.....
D	Dichlorobutene.....	8	NA2920	I	CORROSIVE, FLAMMABLE LIQUID.	.....	None	201	243	0.5 L.....	1.2.....
	Dichlorodifluoromethane (R-12).....	2.2	UN1028	.....	NONFLAMMABLE GAS.	.....	306	304	314	75 kg.....	1.2.....
	Dichlorodifluoromethane and difluoroethane azeotropic mixture (R200) with approximately 74 per cent dichlorodifluoromethane.	2.2	UN2602	III	NONFLAMMABLE GAS.	.....	306	304	314	150 kg.....	1.3.....
	Di-1,2-difluoromethane and ethylene oxide mixture, with not more than 12% ethylene oxide.	2.3	UN3070	III	POISON GAS, FLAMMABLE GAS.	B14, B33, 10.	None	304	244	Forbidden.....	1.....
	Dichlorodimethyl ether, symmetrical.....	6.1	UN2249	4	POISON	T25	None	201	243	Forbidden.....	1.....
	1,1-Dichloroethane.....	3	UN2362	II	FLAMMABLE LIQUID.	T7	150	202	242	5 L.....	1.3.....
	1,2-Dichloroethane, see Ethylene dichloride.	3	UN1150	II	FLAMMABLE LIQUID.	T14	150	202	242	60 L.....	1.3.....
	Dichloroethyl ether.....	6.1	UN1916	II	POISON	N33, N34, T8.	None	202	243	6 L.....	1.2.....
	Dichloroethyl sulfide.....	Forbid-									
	Dichlorofluoromethane.....	2.2	UN1029	.....	NONFLAMMABLE GAS.	B51	306	304	314	150 kg.....	1.3.....
	Dichloroisocyanuric acid, dry or Dichloroisocyanuric acid salts.	5.1	UN2465	II	OXIDIZER	B10, 28	152	212	240	5 kg.....	1.2.....
	Dichloroisopropyl ether.....	6.1	UN2490	II	POISON.....	T8	None	202	243	5 L.....	1.2.....
	Dichloromethane.....	6.1	UN1593	III	KEEP AWAY FROM FOOD.	N36, T13	153	203	241	60 L.....	1.2.....
	1,1-Dichloro-1-nitroethane.....	6.1	UN2650	II	POISON.....	T8	None	202	243	6 L.....	1.3.....

Hazardous materials descriptions and proper shipping names															
Hazard class	Pack- ing group	Identifi- cation numbers	Labels		Special provisions										
(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)	(11C)	Other stowage provisions	
Dichloropentanes	3	UN1152	II FLAMMABLE LIQUID, POISON.....	B1, T1.....	150	202	241	60 L.....	220 L.....	1,3.....	1,3.....	1,3.....	1,3.....	12, 40, 95	
Dichlorophenyl isocyanates	6.1	UN2250	II CORROSIVE.....	E2, B6, N16, N26, N34, T8, T26.	None	202	242	242	100 kg.....	1,3.....	1,3.....	1,3.....	1,3.....	25, 40, 95	
Dichlorophenyltrichlorosilane	8	UN1766							30 L.....	1.....	1.....	1.....	1.....	40	
Dichloropropane, see Propylene dichloride 1,3-Dichloropropanol-2	6.1	UN250	II FLAMMABLE LIQUID,	T8.....	None	202	243	5 L.....	50 L.....	1,3.....	1,3.....	1,3.....	1,3.....	12, 40, 95	
Dichloropropene	3	UN2047	II POISON.....	150	202	242	5 L.....	60 L.....	1,3.....	1,3.....	1,3.....	1,3.....	1,3.....	40, 95	
Dichloropropene and propylene dichloride mixture, see Propylene dichloride.															
Dichlorosilane	2.3	UN2189	II POISON GAS, FLAMMABLE GAS.	B13, B14, B31, 10.	None	304	244	Forbidden.....	Forbidden.....	1.....	5.....	5.....	5.....	40, 95	
Dichlorotetrafluorobutane	2.2	UN1958	II NONFLAMMA- BLE GAS.		305	304	314, 315	75 kg.....	150 kg.....	1,3.....	1,3.....	1,3.....	1,3.....	85	
3,5-Dichloro-2,4,6-trifluoropyridine	6.1	NA2210	I POISON.....	B14, B32, 10.	227	244	Forbidden.....	Forbidden.....	1.....	1.....	1.....	1.....	1.....	40, 95	
Dichlorovinylchloroarsine	Forbid- den	UN2121	II ORGANIC PEROXIDE.	B9, B20.....	152	225	243	10 kg.....	25 kg.....	1.....	1.....	1.....	1.....	12, 40	
Dicumyl peroxide, technically pure, or Dicu- myl peroxide with inert solid.															
Dicycloheptadiene see Nortbornadiene	8	UN2665	III CORROSIVE.....	T8.....	154	203	241	5 L.....	60 L.....	1,2.....	1,2.....	1,2.....	1,2.....	34	
Dicycloheptamethylene	6.1	UN2287	III KEEP AWAY FROM FOOD.		155	213	240	100 kg.....	200 kg.....	1,2.....	1,2.....	1,2.....	1,2.....	34	
Dicyclohexyl ammonium nitrite	5.2	UN2153	I ORGANIC PEROXIDE.		None	225	None	Forbidden.....	Forbidden.....	1.....	5.....	5.....	5.....	2, 40	
Dicyclohexyl peroxydicarbonate, not more than 91 per cent with water.	5.2	UN2152	I ORGANIC PEROXIDE.		None	225	None	Forbidden.....	Forbidden.....	1.....	5.....	5.....	5.....	2, 40	
Dicyclohexylamine	5.2	UN2048	III FLAMMABLE LIQUID.	T1.....	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....	1,3.....	1,3.....	12, 40	
Dicyclopentadiene	3	UN2120	II ORGANIC PEROXIDE.		None	225	None	Forbidden.....	Forbidden.....	1.....	5.....	5.....	5.....	12, 40	
Didecanoyl peroxide, technically pure	5.2	UN2168	II ORGANIC PEROXIDE.		152	225	None	5 kg.....	10 kg.....	1.....	5.....	5.....	5.....	12, 40	
2,2-Di-(4-di-tert-butylperoxycyclohexyl) propane, more than 42 per cent with inert solid.															
2,2-Di-(4-di-tert-butylperoxycyclohexyl) propane, not more than 42 per cent with inert solid.	5.2	UN2138	II ORGANIC PEROXIDE.		152	225	None	10 kg.....	25 kg.....	1.....	5.....	5.....	5.....	12, 40	

Signs -Ets	Hazardous materials descriptions and proper shipping names	Hazard class	Identifi- cation numbers	Pack- ing group	Labels	Special provisions	Packaging authorizations (§ 1730)		Quantity limitations		Cargo aircraft only	Cargo vessel	Passenger aircraft or railcar	Passenger aircraft or railcar	Vessel storage requirements (10)
							(8) Non- bulk pack- aging	(8B) Exception	(9A)	(9B)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	152	225	None	5 L.....	10 L.....	1	5	5	12, 40
	Di-2,4-dichlorobenzoyl peroxide, not more than 52 per cent in solution.	5.2	UN2139	II	ORGANIC PEROXIDE.		152	225	None	5 kg.....	10 kg.....	1	5	5	12, 40
	Di-2,4-dichlorobenzoyl peroxide, not more than 75 per cent with water.	5.2	UN2137	II	ORGANIC PEROXIDE.		150	202	242	5 L.....	60 L.....	1,3	1	1	12, 40
D	1,2-Di-(dimethylamino) ethane.....	3	UN2372	II	FLAMMABLE LIQUID.		152	213	240	25 kg.....	100 kg.....	1,2	1,2	1,2	1,2
	Didymium nitrate.....	5.1	UN1465	III	OXIDIZER.	A1	None	212	242	0.5 kg.....	5 kg.....	1,2	1,2	1,2	1,2
	Dieldrin.....	6.1	NA2761	II	POISON.		150	203	241	60 L.....	220 L.....	1,3	1,3	1,3	1,3
D	Diesel fuel.....	3	NA1202	III	None.....										
	Diethanol nitrosamine dinitrate (dry).....														
	Diethoxymethane.....	3	UN2373	II	FLAMMABLE LIQUID.	T8	150	202	242	5 L.....	60 L.....	1,3	1	5	12
	2,5-Diethoxy-4-morpholinobenzenediazonium zinc chloride.	4.1	UN3036	II	FLAMMABLE SOLID.		None	212	None	15 kg.....	50 kg.....	1	5	5	25
	3,3-Diethoxypropene.....	3	UN2374	II	FLAMMABLE LIQUID.	T1	150	202	242	5 L.....	60 L.....	1,3	1	1	12, 40
	Diethylamine.....	3	UN1154	II	FLAMMABLE LIQUID.	N34, T8	150	202	242	5 L.....	60 L.....	1,3	1	1	12, 40
	Diethylaminos ethanol.....	3	UN2686	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3	1,3	1,3	1,3
	Diethylaminopropylamine.....	8	UN2684	III	CORROSIVE, FLAMMABLE LIQUID.	B1, B2, T8.	154	203	243	5 L.....	60 L.....	1,2	1,2	1,2	1,2
	N,N-Diethyl aniline.....	6.1	UN2432	III	KEEP AWAY FROM FOOD.	T2	168	203	241	60 L.....	220 L.....	1,2	1,2	1,2	34
	Diethylbenzene.....	3	UN2049	III	FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	220 L.....	1,3	1,3	1,3	40
	Diethyl carbonate.....	3	UN2366	III	FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	220 L.....	1,3	1,3	1,3	1,3
	Diethyl cellulose, see Ethylene glycol diethyl ether.	8	UN1767	II	CORROSIVE, FLAMMABLE LIQUID.	B6, N16, N26, N34, T26.	None	202	243	Forbidden	30 L.....	1	1	1	21, 40, 77
	Diethyl dichlorosilane.....														
	Diethylene glycol dinitrate.....														
	Diethylene glycol, desensitized with not less than 25 percent non-volatile water-insoluble plasticizer, by weight.	1.D	UN0075	II	CORROSIVE.....	B2, T8	154	202	242	1 L.....	30 L.....	1,2	1,2	1,2	26, 32, 40, 71
	Diethylene ether.....	3	UN1155	I	FLAMMABLE LIQUID.	T21	150	201	243	1 L.....	30 L.....	1,3	1,3	1,3	12, 40
	N,N-Diethylethylene diamine.....	8	UN2685	II	CORROSIVE, FLAMMABLE LIQUID.	T8	None	202	243	1 L.....	30 L.....	1,3	1,3	1,3	12, 21

Sym- bols	Hazardous materials descriptions and proper shipping names	Pack- ing group	Identifica- tion numbers	Labels	Spatial provisions	(6) Packaging authorizations (§173.)		Quantity limitations		Vessel storage requirements (10)	Other stowage provisions (10C)		
						(5)	(4)	(6)	(7)	(8A)	(8B)		
(1)	D-(1-hydroxytetrazole) (dry)	(2)	(3)	(4)	(5)	Forbid- den	Forbid- den						
	Diisooctylene												
	Disobutylene		3	UN2961	III	FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	1,3.....	
	Disobutylene, isomeric compounds		3	UN2050	II	FLAMMABLE LIQUID.	T1	150	202	242	5 L.....	1,3.....	
	Diisobutyl ketone		3	UN1157	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	1,3.....	
	Diisobutyl peroxide, not more than 52 per cent in solution		5.2	UN2182	II	CORROSIVE ORGANIC PEROXIDE.		None	225	None	Forbidden	1.....	
	Diisooctyl acid phosphate		8	UN1902	III	CORROSIVE FLAMMABLE LIQUID.	T7	154	203	241	5 L.....	1,2.....	
	Diisopropylamine		3	UN1158	II	T8	150	202	242	5 L.....	60 L.....	1,3.....	
	Diisopropylbenzene hydroperoxide, see Isopropyl cumyl hydroperoxide, etc.		3	UN1159	II	FLAMMABLE LIQUID. ORGANIC PEROXIDE.	T8	150	202	242	5 L.....	60 L.....	1,3.....
	Diisopropyl peroxydicarbonate or Isopropyl peroxydicarbonate, technically pure.		5.2	UN2133	II	ORGANIC PEROXIDE.		None	225	None	Forbidden	1.....	
	Diisopropyl peroxydicarbonate or Isopropyl peroxydicarbonate, not more than 52 per cent in solution.		5.2	UN2134	II	ORGANIC PEROXIDE.		None	225	None	Forbidden	1.....	
	Diketene, initiated		5.2	UN2689	II	ORGANIC PEROXIDE. FLAMMABLE LIQUID. PKSON. ORGANIC PEROXIDE.		None	227	244	Forbidden	1.....	
	Dilauroyl peroxide (lauroyl peroxide, not more than 52 per cent, stable dispersion, in water).		5.2	UN2893	II	ORGANIC PEROXIDE.	10, B14, B32..	152	225	None	10 L.....	25 L.....	
	Dilauroyl peroxide (lauroyl peroxide), tech- nically pure.		5.2	UN2124	II	ORGANIC PEROXIDE.		152	225	None	10 kg.....	25 kg.....	
	1,1-Dimethoxyethane		3	UN2377	II	FLAMMABLE LIQUID.	T7	150	202	242	5 L.....	60 L.....	
	1,2-Dimethoxyethane		3	UN2252	II	FLAMMABLE LIQUID.	T7	150	202	242	5 L.....	60 L.....	
	Dimethylamine, anhydrous		2.3	UN1032	II	Poison Gas, FLAMMABLE GAS.	B14, B33, 10.	None	304	314	315	1.....	
	Dimethylamine solution		3	UN1160	II	FLAMMABLE LIQUID.	T8	150	202	242	5 L.....	60 L.....	
	2-Dimethylaminoacetonitrile		3	UN2378	II	FLAMMABLE LIQUID POISON SOLID.		None	202	243	1 L.....	60 L.....	
	4-Dimethylamino-6-(2- dimethylaminoethoxy) tollene-2-diazoni- um zinc chloride.		4.1	UN3039	II	PoisonON.....	T8	None	212	None	Forbidden	1.....	
	Dimethylaminomethyl methacrylate		6.1	UN2522	II	PoisonON.....	T8	None	202	243	5 L.....	60 L.....	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (§ 173.***)		Quantity limitations (9)		Vessel stowage requirements (10)		
							(8A)	(8B)	(8C)	(8D)	(8E)	(8F)	
(f)	N,N-Dimethylaniline Di-(2-methylbenzoyl) peroxide, not more than 85 per cent with water. 2,5-Dimethylbutane 1,3-Dimethylbutylamine Dimethylcarbamoyl chloride Dimethyl carbonate <i>Dimethyl chlorotriphosphite, see Corrosive liquid, poisonous, n.o.s.</i> Dimethylcyclohexanes Dimethylcyclohexylamine 2,5-Dimethyl-2,5-di-(benzoyl)peroxy hexane, not more than 82 per cent with inert solid. 2,5-Dimethyl-2,5-di-(benzoyl)peroxy hexane, not more than 82 per cent with water. 2,5-Dimethyl-2,5-di-(benzoyl)peroxy hexane, technically pure. 2,5-Dimethyl-2,5-ditert-butylperoxy hexane, not more than 52 per cent with inert solid. 2,5-Dimethyl-2,5-di-3 (tert-butyl)peroxy hexane, technically pure. 2,5-Dimethyl-2,5-ditert-butylperoxy hexane-3, not more than 52 per cent with inert solid. 2,5-Dimethyl-2,5-di(tert-butylperoxy)dimethylchlorosilane Dimethylchlorosilane 2,5-Dimethyl-2,5-di(2-ethylhexanoyl)peroxy hexane, technically pure. 2,5-Dimethyl-2,5-dihydroperoxy hexane, dihydroperoxy hexane, or more than 82 per cent with water. 2,5-Dimethyl-2,5-dihydroperoxy hexane, more than 82 per cent with water. Dimethylidioxanes	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	(8D)	(8E)	
	UN2253 UN2593	II I	POISON ORGANIC PEROXIDE.	T8	None None	202 225	243 Non bulk packag ing	6 L Forbidd en	60 L Forbidd en	1,3 1.....	1,3 5.....	95 2,40	
	UN2457	II	FLAMMABLE LIQUID.	T13	150	202	242 Non bulk packag ing	5 L Forbidd en	60 L Forbidd en	1,3 1.....	5.....	12	
	UN2879	II	FLAMMABLE LIQUID.	T8	150	202	242 Non bulk packag ing	5 L Forbidd en	60 L Forbidd en	1,3 1.....	1.....		
	UN2262 UN1161	II II	CORROSIVE FLAMMABLE LIQUID.	B2, T8 T8	154 150	202 202	242 Non bulk packag ing	1 L Forbidd en	30 L Forbidd en	1,2 1,3.....	1,2 1.....	40	
	
	UN2263	II	FLAMMABLE LIQUID CORROSIVE.	T1 B2, T8	150 154	202 202	242 Non bulk packag ing	5 L Forbidd en	60 L Forbidd en	1,3 1.....	1,3 1.....	12, 21, 40	
	UN2264	II	ORGANIC PEROXIDE.	.....	None	225	Non	.....	30 L Forbidd en	1,3 1.....	1,3 5.....	12, 21, 40
	UN2773	II	ORGANIC PEROXIDE.	.....	152	225	Non	5 kg	10 kg	1.....	1.....	12, 21, 40
	
	UN2959	II	ORGANIC PEROXIDE.	.....	None	225	Non	.....	.....	1.....	5.....	12, 40
	
	UN2172	II	ORGANIC PEROXIDE.	.....	152	225	Non	.....	.....	1.....	5.....	12, 40
	UN2156	II	ORGANIC PEROXIDE.	152	225	Non	5 kg	10 kg	1.....	5.....	12, 40
	
	UN2155	II	ORGANIC PEROXIDE.	.....	152	225	Non	.....	10 L	1.....	5.....	12, 40
	UN2159	II	ORGANIC PEROXIDE.	152	225	Non	5 kg	10 kg	1.....	5.....	12, 40
	
	UN2158	II	ORGANIC PEROXIDE.	.....	None	225	Non	.....	.....	1.....	5.....	12, 40
	UN1162	I	FLAMMABLE LIQUID. POISON.	B14, B32, 10.	None	227	244	Forbidd en	Forbidd en	1,3.....	1.....	40	
	
	UN2380	II	FLAMMABLE LIQUID.	T8	150	202	242 Non	5 L Forbidd en	60 L Forbidd en	1,3 1.....	1.....		
	UN2157	II	ORGANIC PEROXIDE.	.....	.....	225	Non	.....	.....	1.....	5.....	20, 40
	UN2174	I	ORGANIC PEROXIDE.	.....	.....	225	Non	.....	.....	1.....	5.....	12, 40
	
	UN2707	II	FLAMMABLE LIQUID.	TB, T31	150	202	242 Non	5 L Forbidd en	60 L Forbidd en	1,3.....	1.....		

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifications numbers	Packaging group	Labels	Special provisions	Packing autorizations (b) (173-1)		Quantity limitations (b)		Vessel stowage requirements (10)	
							(7)	(6)	(8A)	(8B)	(8C)	(8A)
D	Dimethyl disulfide	3	UN2381	II	FLAMMABLE LIQUID.	B1, T7, T30, T8	150	203	242	60 L.....	220 L.....	1,3.....
	2,5-Dimethyl-2,5-di(5,5-trimethyl hexanoyl peroxy)-hexane, or 2,5-Dimethyl-2,5-tris(isononanoylperoxy)-hexane not more than 77% in solution .	5.2	UN9060	II	FLAMMABLE LIQUID. ORGANIC PEROXIDE.	.....	.....	None	225	5 L.....	60 L.....	1,3.....
	Dimethyl ether	3	UN2051	III	FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	220 L.....	1,3.....
	Dimethyllethanamine	2.1	UN1033	III	FLAMMABLE GAS.	.....	.....	306	304	314.....	150 kg.....	1,3.....
	N,N-Dimethylformamide	3	UN2265	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....
	Dimethylhexane dihydroperoxide, see 2,5-Dimethyl-2,5-dihydroperoxy hexane, etc.	3	UN2382	I	FLAMMABLE LIQUID.	B14, B32, N15, N26, B14, B32, N15, N26, B14, B32, N10, B13	None	227	244	Forbidden	Forbidden	1,3.....
	Dimethylhydrazine, unsymmetrical	3	UN1163	I	FLAMMABLE LIQUID.	POISON, CORROSIVE.	.....	.....	244	Forbidden	Forbidden	1,3.....
D	Dimethyl phosphorochloridothioate	6.1	NA2927	I	POISON, CORROSIVE.	B14, B32, N10, B13	None	227	244	Forbidden	Forbidden	1,2.....
	2,2-Dimethylpropane other than pentane or Isopentane.	2.1	UN2044	II	FLAMMABLE GAS.	.....	.....	306	304	244	Forbidden	150 kg.....
	Dimethyl-N-propylamine	3	UN2266	II	FLAMMABLE LIQUID.	.....	.....	None	202	243	1 L.....	5 L.....
	Dimethyl sulfite	6.1	UN1595	I	POISON, CORROSIVE.	T18, T26 .....	.....	.....	244	Forbidden	Forbidden	1,3.....
	Dimethyl sulfide	3	UN1164	I	FLAMMABLE LIQUID.	.....	.....	None	201	243	1 L.....	1 L.....
	Dimethyl thiophosphoryl chloride	8	UN2267	I	POISON, CORROSIVE.	.....	.....	.....	201	243	1 L.....	30 L.....
	Dimethyl zinc.....	4.2	UN1370	I	SPONTANEOUSLY COMBUSTIBLE.	10, B14, B32, B11, B16, T26, T29, T40 .....	.....	.....	227	244	Forbidden	1,3.....
	Dimyristyl peroxydicarbonate, not more than 24 per cent, stable dispersion, in water.	5.2	UN2892	II	DANGEROUS WHEN WET.	ORGANIC PEROXIDE.	.....	.....	None	225	None	5.....
	Dimyristyl peroxydicarbonate, technically pure.	5.2	UN2595	II	ORGANIC PEROXIDE.	.....	.....	.....	.....	None	225	None
	Di-(1-naphthoyl) peroxide	Forbid-den								Forbidden	1	5.....

Syn- onyms	Hazardous materials descriptions and proper shipping names	Identification numbers	Pack- ing group	Labels	(B) Packaging authorizations (G 13***)				(C) Quantity limitations				(D) Vessel stowage requirements			
					(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)	(10C)	
	Dinitrobenzene.....	1,3C Forbid- den 4.1	UN0406	II FLAMMABLE SOLID.				Non ^a	212	None	Forbidden ...	Forbidden ...	1	5	12, 25, 48, 52, 53	
	Dinitrobenzylamide and salts of (dry)	UN2973	II FLAMMABLE SOLID.					None	212	None	Forbidden ...	Forbidden ...	1	5	12, 25, 48, 52, 53	
	N,N'-Dinitroso-N,N'-dimethyl terephthalimide not more than 72% as a paste.	4.1	UN2922	II FLAMMABLE SOLID.												
	N,N'-Dinitroso pentamethylene tetramine not more than 82% with pregranulator.															
	2,2-Dinitrostilbene.....															
	1,4-Dinitro-1,1,4-tetramethylolbutanetetrinitrate (dry). Dinitrotoluenes, liquid.	6.1	UN2038	II POISON KEEP AWAY FROM FOOD.	T14, T38... T14, T38...			None	202	243	5 L	60 L	1,2	1,2		
	Dinitrotoluenes, molten.	6.1	UN1800	II POISON	T14, T38...			None	202	243	60 L	220 L	1,2	1,2		
	Dinitrotoluenes, solid.	6.1	UN2038	II POISON	T8, T38...			None	212	242	25 kg	100 kg	1,2	1,2		
	2,4-Dinitro-1,3,5-trimethylbenzene.															
	Di-(beta-nitroethyl) ammonium nitrate.....															
	a,a'-Di-(nitroxy) methyl ether.....															
	1,9-Dinitro pentamethylene-2,4,6,8-tetra- mine (dry).	5.2	UN2130	II ORGANIC PEROXIDE.				None	225	None	Forbidden ...	Forbidden ...	1	5	2, 40	
	Di-n-hexanoyl peroxide, technically pure.....	5.2	UN2129	II ORGANIC PEROXIDE.				None	225	None	Forbidden ...	Forbidden ...	1	5	2, 40	
	Di-n-octanoyl peroxide, technically pure.....	3	UN1165	II FLAMMABLE LIQUID.	T8			150	202	242	5 L	60 L	1,3	1		
	Dioxane.....	3	UN1166	II FLAMMABLE LIQUID.	T8			150	202	242	5 L	60 L	1,3	1	40	
	Dipentene.....	3	UN2052	III FLAMMABLE LIQUID.	T1			150	203	242	60 L	220 L	1,3	1		
	Dipercy azelatic acid not more than 27 per cent with not less than 13 per cent azellic acid and not less than 53 per cent sodium sulfate.	5.2	UN2958	II ORGANIC PEROXIDE.				None	225	None	Forbidden ...	Forbidden ...	1	5	2, 40	
	Diperoxy dodecane diacid, not more than 42% with not less than 56% sodium sulfate.	5.2	UN3033	II ORGANIC PEROXIDE.				None	225	None	Forbidden ...	Forbidden ...	1	5	2	
	Di-(2-phenoxyethyl)-peroxy dicarbonate, not more than 85% with water.	5.2	UN3059	II ORGANIC PEROXIDE.				None	225	None	5 kg	10 kg	1	5	2	
	Di-(2-phenoxyethyl)-peroxy dicarbonate, technically pure.	5.2	UN3058	II ORGANIC PEROXIDE				None	225	None	Forbidden ...	Forbidden ...	1	5	2	
	Diphenoxyamine chloroquine (DM)	6.1	UN1698	I POISON					10				None	227	40, 95	

(1) Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (47173***)		Quantities in millions		Vessel stowage requirements			
							(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)	(10C)
(1)	Disuccinic acid peroxide or Succinic acid peroxide, technically pure. Disuccinic acid peroxide, not more than 72 per cent, wetted with water. Dithiocarbamate pesticides, liquid, flammable, toxic, n.o.s., flash point less than 23°C.	5.2	UN2135	I	ORGANIC PEROXIDE.		None	225	None	Forbidden	Forbidden	1	5	12, 40
		5.2	UN2682	I	ORGANIC PEROXIDE.		None	225	None	Forbidden	Forbidden	1	5	20, 40
		3	UN2772	I	FLAMMABLE LIQUID.		None	201	243	Forbidden	30 L	1,3	6	
				II	FLAMMABLE POISON.		None	202	243	1 L	60 L	1,3	1	
	Dithiocarbamate pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23°C.	6.1	UN3005	I	LIQUID, POISON.	T42	None	201	243	1 L	30 L	1	1	21, 40, 85
				II	FLAMMABLE LIQUID, POISON.	T14	None	202	243	5 L	60 L	1,3	1	21, 40, 95
				III	FLAMMABLE LIQUID.	T14	153	203	241	60 L	220 L	1,2	1	21, 34, 40
	Dithiocarbamate pesticides, liquid, toxic, n.o.s.	6.1	UN3006	I	KEEP AWAY FROM FOOD.		None	201	243	1 L	30 L	1	1	40, 95
				II	POISON.		None	202	243	5 L	60 L	1,2	1	40, 95
				III	KEEP AWAY FROM FOOD.		153	203	241	60 L	220 L	1,2	12	34, 40
	Dithiocarbamate pesticides, solid, toxic, n.o.s.	6.1	UN2771	I	POISON.		None	211	242	5 kg	50 kg	1,2	1,2	40, 95
				II	KEEP AWAY FROM FOOD.		None	212	242	25 kg	100 kg	1,2	1,2	40, 95
				III	POISON.		153	213	240	100 kg	200 kg	1,2	1,2	40, 95
	Di(3,5,5-trimethyl-1,2-dioxolanyl-3) peroxide, not more than 50 per cent as a paste, with phlegmizer. Di(3,5,5-trimethylhexanoyl) peroxide, in solution, or Di(3,5,5-trimethylhexanoyl) peroxide, technically pure.	5.2	UN2597	II	ORGANIC PEROXIDE.		None	225	None	Forbidden	Forbidden	1	5	20, 40
	Divinyl ether, inhibited.	5.2	UN2128	II	ORGANIC PEROXIDE.		None	225	None	Forbidden	Forbidden	1	5	20, 40
	Dodecybenzenesulfonic acid.....	3	UN1167	II	FLAMMABLE LIQUID.	N15, T14	None	202	241	5 L	60 L	1,3	5	12, 40
	Dodecylnitrilchlorosilane.....	8	NU2684	II	CORROSIVE.	B2, B6, N16, N26, N34, T8, T26	154	202	1 L	30 L	1,2	1,2	40	
		8	UN1771	II	CORROSIVE.	B2, B6, N16, N26, N34, T8, T26	None	202	242	1 L	30 L	1	1	
	Driers, paint or varnish, liquid, n.o.s.....	3	UN1168	II	FLAMMABLE LIQUID.	T8, T26	150	173	242	5 L	60 L	1,3	1	
	Driers, paint or varnish, solid, n.o.s.....	4.1	UN1371	III	FLAMMABLE SOLID.	B1, T7, T30	150	173	242	60 L	220 L	1,3	1,3	
	Dry ice, see Carbon dioxide, solid											100 kg	100 kg	1,3

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	(8) Packaging authorizations (§ 1730)		(9) Quantity limitations		(10) Vessel stowage requirements			
							(A)	(B)	(C)	(D)	(E)	(F)		
(1)	Dyes, n.o.s. or Dye intermediates, n.o.s., corrosive liquid.	8	UN2801	II	CORROSIVE..... B2, T14, T14, 11;	154	202	242	1 L..... 30 L.....	1.2..... 1.2.....	1.2..... 1.2.....	23		
	Dyes, n.o.s. or Dye intermediates, n.o.s., poisonous liquid.	6.1	UN1602	III	CORROSIVE..... POISON.....	154	203	241	5 L..... 60 L.....	1.2..... 1.2.....	1.2..... 1.2.....	23, 95		
	Dyes, n.o.s. or Dye intermediates, n.o.s., poisonous solid.	6.1	UN1602	II	KEEP AWAY FROM FOOD.	None	202	243	1 L..... 30 L.....	1.2..... 1.2.....	1.2..... 1.2.....	23, 95		
	Dyes, n.o.s. or Dye intermediates, n.o.s., corrosive solid.	8	UN2801	II	POISON.....	153	203	241	60 L..... 220 L.....	1.2..... 1.2.....	1.2..... 1.2.....	34		
	Dyes, n.o.s. or Dye intermediates, n.o.s., corrosive, see Explosive, blasting, type A.....					None	211	242	5 kg..... 50 kg.....	1.2..... 1.2.....	1.2..... 1.2.....	95		
	EDTA. See Ethylenediaminetetraacetic acid.					None	212	242	25 kg..... 100 kg.....	1.2..... 1.2.....	1.2..... 1.2.....	95		
	Dynamite, see Explosive, blasting, type A.....					153	213	240	100 kg..... 200 kg.....	1.2..... 1.2.....	1.2..... 1.2.....	34		
	Ethyleneglycol (acid or alkali) for batteries, see Battery fluid, acid or Battery fluid, alkali.					11	154	212	242	15 kg..... 50 kg.....	1.2..... 1.2.....	1.2..... 1.2.....	34	
	Engines, internal combustion, see Vehicle, self-propelled.					11	154	213	240	25 kg..... 100 kg.....	1.2..... 1.2.....	1.2..... 1.2.....	34	
	Engine starting fluid, with flammable gas.	2.1	UN1960		FLAMMABLE GAS.	306	304	244	Forbidden....	150 kg..... 150 kg.....	1.3..... 1.3.....	40, 65		
	Epibromohydrin.....	6.1	UN2558	I	POISON.....	None	201	243	Forbidden....	1..... 1.....	5..... 5.....	23, 25,		
	Epinchlorohydrin.....	6.1	UN2023	II	POISON.....	None	202	243	5 L..... 60 L.....	1.2..... 1.2.....	1.2..... 1.2.....	40, 85 23, 40, 95		
	1,2-Epoxy-3-ethoxypropane.....	3	UN2752	III	FLAMMABLE LIQUID.	150	203	242	60 L..... 220 L.....	1.3..... 1.3.....	1.3..... 1.3.....			
	Etching acid, liquid, n.o.s., see Hydrofluoric acid, solution.					2.1	UN1085	FLAMMABLE GAS.	306	304	150 kg..... 150 kg.....	1.3..... 1.3.....	40, 85	
	Ethane, compressed.....					2.1	NA1961	FLAMMABLE GAS.	313	None	244	Forbidden....	1..... 1.....	40
D	Ethane-Propane mixture, refrigerated liquid.....	2.1	UN1961	III	CORROSIVE..... T7.....	154	203	241	5 L..... 60 L.....	1.2..... 1.2.....	1.2..... 1.2.....			
	Ethaneamine, refrigerated liquid.....	2.1	UN1961	II	FLAMMABLE LIQUID.	T1	150	202	242	5 L..... 60 L.....	1.3..... 1.3.....	1..... 1.....		
	Ethanolamine or Ethanolamine solutions.....	8	UN2491	III	CORROSIVE..... T1, T1.....	150	203	242	60 L..... 220 L.....	1.3..... 1.3.....	1..... 1.....			
	Ethanol (Ethyl alcohol) or Ethanol (Ethyl alcohol) solutions.	3	UN1170	II	FLAMMABLE LIQUID.	T2	180	202	242	5 L..... 60 L.....	1.3..... 1.3.....	1..... 1.....		

(1)	Symbol	Hazardous materials descriptions and proper shipping names	(2)	Hazard class	Identifying numbers	Packing group	Labels	(5)	(6)	(B) Packaging authorizations (§ 173.17)			(C) Quantity limitations			(D) Vessel stowage requirements		
										(7)	(8)	(9)	(10A)	(10B)	(10C)	(10D)	(10E)	(10F)
		Ethyl acetylene, inhibited.....	2.1	UN2452	III	FLAMMABLE GAS.	B13.....	None	304	244	Forbidden	150 kg.....	1.....	5.....	40			
		Ethyl acrylate, inhibited.....	3	UN1917	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....	40			
		Ethyl alcohol, see Ethanol.....																
		Ethyl aldehyde, see Acetaldehyde.....																
		Ethylamine, aqueous solution with not less than 50 per cent but not more than 70 per cent ethylamine.....	2.1	UN1036	II	FLAMMABLE GAS.	B13.....	None	321	244	Forbidden	150 kg.....	1.....	5.....	40, 85			
		Ethyl amyl ketone.....	3	UN2271	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....	12, 40			
		N-Ethylaniline.....	6.1	UN2222	II	KEEP AWAY FROM FOOD.	T2.....	153	203	241	60 L.....	220 L.....	1,2.....	1,2.....	26, 34			
		2-Ethylaniline.....	6.1	UN2273	III	KEEP AWAY FROM FOOD.	T2.....	153	203	241	60 L.....	220 L.....	1,2.....	1,2.....	26, 34			
		Ethylbenzene.....	3	UN1175	II	FLAMMABLE LIQUID.	T1	150	202	242	5 L.....	60 L.....	1,3.....	1.....	34			
		N-Ethyl-N-benzylaniline.....	6.1	UN2274	III	KEEP AWAY FROM FOOD.	T2.....	153	203	241	60 L.....	220 L.....	1,2.....	1,2.....	34			
		N-Ethylbenzyltoluidines.....	6.1	UN2753	III	KEEP AWAY FROM FOOD.	T8.....	153	203	241	60 L.....	220 L.....	1,3.....	1,3.....	12, 34			
		Ethyl borate.....	3	UN1176	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....				
		Ethyl bromide.....	6.1	UN1851	II	POISON.....	T17.....	None	202	243	5 L.....	60 L.....	1,3.....	1.....	40, 48,			
		Ethyl bromoacetate.....	6.1	UN1603	II	POISON.....	T14.....	None	202	243	Forbidden	150 kg.....	1.....	5.....	95			
		2-Ethylbutanol.....	3	UN2275	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....				
		Ethylbutyl acetate.....	3	UN1177	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....				
		Ethyl butyl ether.....	3	UN1179	II	FLAMMABLE LIQUID.	B1, T1	150	202	242	5 L.....	60 L.....	1,3.....	1.....				
		2-Ethylbutyraldehyde.....	3	UN1178	II	FLAMMABLE LIQUID.	B1, T1	150	202	242	5 L.....	60 L.....	1,3.....	1.....				
		Ethyl butyrate.....	3	UN1180	II	FLAMMABLE LIQUID.	T1	150	202	242	5 L.....	60 L.....	1,3.....	1,3.....				
		Ethyl chloride.....	2.1	UN1037	I	FLAMMABLE GAS.	B13.....	None	322	244	Forbidden	150 kg.....	1.....	5.....	40, 85			
		Ethyl chloroacetate.....	6.1	UN1181	II	POISON.....	T14.....	None	202	243	5 L.....	60 L.....	1,2.....	1,2.....	23, 40,			
		Ethyl chloroformate.....	3	UN1182	I	FLAMMABLE LIQUID, POISON, CORROSIVE.	B14, B32, N1, N11, N26, N34, 10	None	227	244	Forbidden	1,3.....	5.....	48, 95				

Symbol	Hazardous materials descriptions and proper shipping names	Hazard Class	Identification numbers	Packing group	Labels	Special provisions	(8) Packaging authorizations (§173***)		(9) Quantity limitations		(10) Vessel stowage requirements		
							(8A)	(8B)	(8C)	(8D)	Cargo vessel	Pas-senger vessel	
(1)	Ethyl-2-chloropropionate	3	UN2935	II	FLAMMABLE LIQUID. CORROSIVE.....	B1..... B14, B32, T1..... 10.....	150	203	242	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 21, 40, 95.....	
	Ethyl chlorothioformate.....	8	UN2826	II	FLAMMABLE LIQUID.	None	227	244	Forbidden	1	1,3.....	1,3.....	
	Ethyl crotonate	3	UN1862	II	FLAMMABLE LIQUID.	160	202	242	5 L..... 60 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Ethyl cyanoacetate.....	6.1	UN2666	III	KEEP AWAY FROM FOOD.	163	203	241	60 L..... 220 L.....	1,2..... 1,2.....	1,2..... 1,2.....	1,2..... 26, 34.....	
	Ethyl-3,3-di-(tert-butylperoxy) butyrate, not more than 50 per cent with inert inorganic solid.	5.2	UN2598	II	ORGANIC PEROXIDE.	152	225	None	5 kg..... 10 kg.....	1	5..... 5.....	12, 40.....	
	Ethyl-3,3-di-(tert-butylperoxy) butyrate, not more than 77 per cent in solution.	5.2	UN2185	II	ORGANIC PEROXIDE.	152	225	None	5 L..... 10 L.....	1	5..... 5.....	12, 40.....	
	Ethyl-3,3-di-(tert-butylperoxy) butyrate, pure.	5.2	UN2184	II	ORGANIC PEROXIDE.	None	225	None	Forbidden	1	5..... 5.....	12, 40.....	
	Ethyldichloroarsine.....	6.1	UN1892	I	Poison.....	B14, B32, 10.....	None	227	244	Forbidden	1	5..... 40, 95.....	
	Ethyldichlorostane	4.3	UN1163	I	DANGEROUS WHEN WET, CORROSIVE, FLAMMABLE LIQUID.	A2, N1, N15, N26, N34, T18, T26, T10.....	None	201	244	Forbidden	1 L.....	1	1,40.....
	Ethylene chlorhydrin	6.1	UN1135	I	Poison.....	B14, B32, T13..... 10.....	None	227	244	Forbidden	1,2.....	1,2.....	23, 40, 48, 55.....
	Ethylene, compressed	2.1	UN1862	II	FLAMMABLE GAS.	306	304	244	1 L..... 150 kg.....	1,3..... 1,3.....	5..... 5.....	40, 85.....	
	Ethylenediamine	8	UN1604	II	CORROSIVE, FLAMMABLE LIQUID.	T14..... 164	202	243	30 L.....	1,3..... 1,3.....	1,3..... 21, 40.....	1,3..... 1,3.....	
	Ethylene diamine diperchlorate	Forbid-den	UN1605	I	Poison.....	B14, B32, 10.....	None	227	244	Forbidden	1,2.....	1,2.....	40, 95.....
	Ethylene dibromide	6.1	UN1184	II	FLAMMABLE LIQUID. Poison.....	T14..... B1, T1.....	None	202	243	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....
	Ethylene dichloride.....	3	UN1153	III	KEEP AWAY FROM FOOD.	150	203	242	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Ethylene glycol diethyl ether	3	UN2369	II	FLAMMABLE LIQUID.	153	203	241	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	22, 25, 40, 34.....	
	Ethylene glycol monoethyl ether	3	UN1171	III	FLAMMABLE LIQUID.	150	203	242	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....	
	Ethylene glycol monoethyl ether acetate.....	3	UN1172	II	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L..... 220 L.....	1,3..... 1,3.....	1,3..... 1,3.....	1,3..... 1,3.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (§ 173)		Quantity limitations		Vessel stowage requirements (10)	
							Non-bulk packaging		Passenger aircraft or trailer		Cargo vessel	Pas-senger vessel
							(B)	(B/C)	(B)	(B/B)	(10A)	(10B)
2.	Ethyleneglycol monomethyl ether.....	3	UN1188	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	13.... 13....
	Ethyleneglycol monomethyl ether acetate.....	3	UN1189	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.... 1,3....
	Ethylamine, inhibited.....	6.1	UN1185	I	POISON, FLAMMABLE LIQUID.	B14, B32, N16, N17, N25, N32, 10.	None	227	244	Forbidden ...	Forbidden ...	1.... 1....
	Ethylene oxide and carbon dioxide mixtures; see Carbon dioxide and ethylene oxide mixtures, etc.	3	UN2983	I	FLAMMABLE LIQUID.	N4, N15, N34, N40, 40	None	201	243	Forbidden ...	30 L.....	1,3.... 5.....
	Ethylene oxide and propylene oxide mixtures, not more than 30 per cent ethylene oxide.	2.3	UN1040	II	POISON GAS, FLAMMABLE GAS.	N4, N15, N34, N40, 40	None	323	248	Forbidden ...	Forbidden ...	1,3.... 1....
	Ethylene oxide, pure or with nitrogen.....	2.1	UN1038	II	FLAMMABLE GAS.	N4, N15, N34, N40, 40	None	316	318, 319	Forbidden ...	Forbidden ...	1
	Ethylene, refrigerated liquid (cryogenic liquid).	2.3	UN2453	II	POISON GAS.....	B13, B33, 10.	None	304	244	Forbidden ...	Forbidden ...	1,3.... 5.....
	Ethyl ether, see Diethyl ether.	3	UN1190	II	FLAMMABLE LIQUID	T8	150	202	242	5 L.....	60 L.....	1,3.... 5.....
	Ethyl fluoride.....	2.3	UN2453	II	POISON GAS.....	T8	None	304	244	Forbidden ...	Forbidden ...	1,3.... 5.....
	Ethyl formate.....	3	UN2276	III	CORROSIVE.....	T2	154	203	241	5 L.....	60 L.....	1,3.... 5.....
	Ethylhexaldehyde, see Octyl aldehydes etc.	6.1	UN2748	II	POISON, CORROSIVE.	T2	202	243	1 L.....	30 L.....	1,3.... 1,3....	1,3.... 1,3....
	2-Ethylhexylamine.....	3	UN2385	II	FLAMMABLE LIQUID.	B13, B14, B30, N15, N26, 10.	None	150	202	242	5 L.....	60 L.....
	2-Ethylhexylchloroformate.....	3	UN2481	I	FLAMMABLE LIQUID.	B13, B14, B30, N15, N26, 10.	None	226	244	Forbidden ...	Forbidden ...	1
	Ethyl hydroperoxide.....	3	UN1192	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.... 1,3....
	Ethyl isobutyrate.....	3	UN2363	I	FLAMMABLE LIQUID.	T1	None	202	243	Forbidden ...	30 L.....	1,3.... 5.....
	Ethyl isocyanate.....	3	UN2277	II	FLAMMABLE LIQUID.	T1	150	202	242	5 L.....	60 L.....	1,3.... 1,3....
	Ethyl lactate.....	2.1	UN1039	III	FLAMMABLE GAS.	B13	None	324	244	Forbidden ...	150 kg.....	1,3.... 1,3....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifying numbers	Packing group	Labels	Special provisions	(B) Authorizations (§73-)		(G) Limitations		Vessel stowage requirements (10)	Other storage provisions (10C)	
							(6A)	(6B)	(6C)	(6D)	(6E)		
D	Ethyl methyl ketone or Methyl ethyl ketone.....	3	UN1193	II	FLAMMABLE	T8.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....
D	Ethyl nitrite (nitric ether).....	3	NP1993	II	LIQUID, FLAMMABLE	.....	150	202	None	Forbidden	.....	1,3.....	1.....
	Ethyl nitrite solutions.....	3	UN1194	I	LIQUID, FLAMMABLE	.....	None	201	Name	Forbidden	.....	1,3.....	5.....
	Ethyl orthoformate.....	3	UN2524	II	LIQUID, POISON, FLAMMABLE	.....	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....
	Ethyl oxalate.....	6.1	UN2525	III	KEEP AWAY FROM FOOD.	.....	153	203	241	60 L.....	220 L.....	1,2.....	1,2.....
	Ethyl perchlorate.....	Forbid- den	UN2435	II	CORROSIVE.....	B2, N16, N26, N34, T8, T26.	None	202	242	Forbidden	30 L.....	1.....	1.....
	Ethylphenyldichlorosilane.....												
	Ethyl phosphonothioic dichloride, anhydrous, see Poisonous liquids, corrosive, n.o.s., Inhalation hazard, Packing Group I, Zone B.												
	Ethyl phosphorous dichloride, anhydrous, see Pyrophoric liquids, n.o.s..												
	Ethyl phosphorodichloridate, see Corrosive liquid, n.o.s..												
	1-Ethyl piperidine.....	3	UN2386	II	FLAMMABLE LIQUID	T8.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....
	Ethyl propionate.....	3	UN1195	II	FLAMMABLE LIQUID	.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....
	Ethyl propyl ether.....	3	UN2615	II	FLAMMABLE LIQUID	.....	150	202	242	5 L.....	60 L.....	1,3.....	5.....
	Ethy silicate, see Tetraethyl silicate.....	8	UN2571	II	CORROSIVE.....	B2, T9 T27 T14.....	154	202	242	1 L.....	30 L.....	1,2.....	1.....
	Ethylsulfuric acid.....	6.1	UN2754	II	POISON.....	.....	None	202	243	5 L.....	60 L.....	1,3.....	1,3.....
	N-Ethyltoluidines.....												
	Ethytrichlorosilane.....												
D	Etiologic agent, n.o.s.(see also Infectious substances, etc.).	6.2	NA2814	I	FLAMMABLE LIQUID, CORROSIVE, ETOLOGIC AGENT.....	.....	196	196	None	50 ml or 50 g.	4 L or 4 kg.....	5.....	5.....
	Explosive articles, see Articles, explosive.....												
	Explosive, blasting, type A.....						1.1D	UN0081					
	Explosive, blasting, type B.....						1.1D	UN0082					
	Explosive, blasting, type C.....						1.5D	UN0331					
	Explosive, blasting, type D.....						1.1D	UN0083					
	Explosive, blasting, type E.....						1.1D	UN0241					
	Explosive, blasting, type F.....						1.5D	UN0332					

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging (Globally Harmonized) [§ 173***]	Quantity limitations			(10)	
								(5)	(6)	(7)		
(1)	Films, nitrocellulose base, gelatine coated (except scrap). Fire extinguisher charges, corrosive liquid....	4.1	UN1324	III	FLAMMABLE SOLID. CORROSIVE.....	N15, N34, N41.	None	183	None	25 kg..... 1 L.....	100 kg..... 30 L.....	(10A)
	Fire extinguisher charges, explosive, explosive, see Cartridges, power device. Fire extinguishers with compressed or liquefied gas. Firefighters, solid with flammable liquid.....	8	UN1774	II	.....	.....	154	202	None	100 kg..... 1 L.....	100 kg..... 30 L.....	(10B)
	Fire extinguisher charges, explosive, explosive, see Cartridges, power device. Fire extinguishers with compressed or liquefied gas. Firefighters, solid with flammable liquid.....	2.2	UN1044	.....	NONFLAMMABLE GAS.	.....	306	306	None	75 kg..... 15 kg.....	150 kg..... 50 kg.....	(10C)
	Fireworks, type A..... Fireworks, type B..... Fireworks, type C..... Fireworks, type D..... Fireworks, type D..... Fish meal or fish scrap, unstabilized.....	4.1	UN2623	II	FLAMMABLE SOLID.	A18..... A1, A19.....	None	212	None	15 kg..... 25 kg.....	15 kg..... 100 kg.....	1,3..... 1,3.....
	Fireworks, type A..... Fireworks, type B..... Fireworks, type C..... Fireworks, type D..... Fireworks, type D..... Fish meal or fish scrap, unstabilized.....	1.1G	UN0338	.....	.....	.....	.....	.....	.....	.....	.....	85
	Fireworks, type A..... Fireworks, type B..... Fireworks, type C..... Fireworks, type D..... Fireworks, type D..... Fish meal or fish scrap, unstabilized.....	1.2G	UN0334	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Fireworks, type A..... Fireworks, type B..... Fireworks, type C..... Fireworks, type D..... Fireworks, type D..... Fish meal or fish scrap, unstabilized.....	1.3G	UN0335	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Fireworks, type A..... Fireworks, type B..... Fireworks, type C..... Fireworks, type D..... Fireworks, type D..... Fish meal or fish scrap, unstabilized.....	1.4G	UN0336	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Fireworks, type A..... Fireworks, type B..... Fireworks, type C..... Fireworks, type D..... Fireworks, type D..... Fish meal or fish scrap, unstabilized.....	1.4S	UN0337	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Fireworks, type A..... Fireworks, type B..... Fireworks, type C..... Fireworks, type D..... Fireworks, type D..... Fish meal or fish scrap, unstabilized.....	4.2	UN1374	II	SPONTANEOUSLY COMBUSTIBLE.	A1, A19.....	None	212	241	15 kg..... 50 kg.....	15 kg..... 50 kg.....	1,3..... 1,3.....
	ADW	9	NA9300	III	CLASS 9.....	A1.....	155	213	241	No limit.....	No limit.....	1,2..... 1,2.....
	Fish meal or fish scrap containing 6% to 12% water. Fissile radioactive materials, see Radioactive material, fissile, n.o.s.. Flammable compressed gas, see Compressed or liquefied gas, flammable, etc.. Flammable compressed gas (small receptacles not fitted with a dispersion device, not refillable), see Receptacles, etc.. Flammable gas in lighters, see Lighters for cigarettes or cigars, with flammable gas. Flammable liquids, corrosive, n.o.s..	3	UN2924	I	FLAMMABLE LIQUID.	T42.....	None	201	243	0.5 L..... 1 L.....	2.5 L..... 5 L.....	40
	Fish meal or fish scrap containing 6% to 12% water. Fissile radioactive materials, see Radioactive material, fissile, n.o.s.. Flammable compressed gas, see Compressed or liquefied gas, flammable, etc.. Flammable compressed gas (small receptacles not fitted with a dispersion device, not refillable), see Receptacles, etc.. Flammable gas in lighters, see Lighters for cigarettes or cigars, with flammable gas. Flammable liquids, corrosive, n.o.s..	II	.....	II	FLAMMABLE LIQUID.	T15, T25, T26.....	None	202	243	1 L.....	5 L.....	40
	Fish meal or fish scrap containing 6% to 12% water. Fissile radioactive materials, see Radioactive material, fissile, n.o.s.. Flammable compressed gas, see Compressed or liquefied gas, flammable, etc.. Flammable compressed gas (small receptacles not fitted with a dispersion device, not refillable), see Receptacles, etc.. Flammable gas in lighters, see Lighters for cigarettes or cigars, with flammable gas. Flammable liquids, corrosive, n.o.s..	III	.....	III	FLAMMABLE LIQUID.	B1, T15, T26.....	150	203	242	5 L..... 60 L.....	60 L.....	40
	Fish meal or fish scrap containing 6% to 12% water. Fissile radioactive materials, see Radioactive material, fissile, n.o.s.. Flammable compressed gas, see Compressed or liquefied gas, flammable, etc.. Flammable compressed gas (small receptacles not fitted with a dispersion device, not refillable), see Receptacles, etc.. Flammable gas in lighters, see Lighters for cigarettes or cigars, with flammable gas. Flammable liquids, corrosive, n.o.s..	3	UN1993	I	FLAMMABLE LIQUID.	T42.....	150	201	243	1 L.....	30 L.....	40
	Fish meal or fish scrap containing 6% to 12% water. Fissile radioactive materials, see Radioactive material, fissile, n.o.s.. Flammable compressed gas, see Compressed or liquefied gas, flammable, etc.. Flammable compressed gas (small receptacles not fitted with a dispersion device, not refillable), see Receptacles, etc.. Flammable gas in lighters, see Lighters for cigarettes or cigars, with flammable gas. Flammable liquids, corrosive, n.o.s..	II	.....	II	FLAMMABLE LIQUID.	T8, T31.....	150	202	242	5 L..... 60 L.....	60 L.....	40
	Fish meal or fish scrap containing 6% to 12% water. Fissile radioactive materials, see Radioactive material, fissile, n.o.s.. Flammable compressed gas, see Compressed or liquefied gas, flammable, etc.. Flammable compressed gas (small receptacles not fitted with a dispersion device, not refillable), see Receptacles, etc.. Flammable gas in lighters, see Lighters for cigarettes or cigars, with flammable gas. Flammable liquids, corrosive, n.o.s..	III	.....	III	FLAMMABLE LIQUID.	B1, T7, T30.....	150	203	242	60 L..... 220 L.....	220 L.....	40

Sym- bols	Hazardous materials descriptions and proper shipping names	Hazard class	Identifi- cation numbers	Pack- ing group	Labels	Special provisions	(8) Pack- aging auth- orizations (G.173...)		(9) Quan- tity limita- tions		(10) Vessel stowage requirements			
							Excep- tions (8A)	Non- bulk packag- ing (8B)	Bulk packag- ing (8C)	Passenger aircraft or train	Cargo aircraft only	Cargo vessel	Pas- senger vessel	Other storage provisions
(1)	Fluor dusts, poisonous, see Arsenical dust. Fluoroboric acid.....	8	UN1775	II	CORROSIVE.....	B2, B15, N3, N11, N26, N34, T16, T27.	154	202	242	1 L.....	30 L.....	1.2.....	1.2.....	
	Fluoric acid, see Hydrofluoric acid, solu- tion, etc., Fluorine, compressed.....	2.3	UN1045	I	POISON GAS, OXIDIZER.	None	302	246	Forbiden.....	1.....	5.....	40, 43, 95		
	Fluoroacetic acid.....	6.1	UN2642	I	POISON	None	211	242	1 kg.....	15 kg.....	1.3.....	1.3.....	12, 95	
	Fluoranilines.....	6.1	UN2941	III	KEEP AWAY FROM FOOD.	153	203	241	60 L.....	220 L.....	1.2.....	1.2.....	23, 34	
	Fluorobenzene.....	3	UN2387	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	1.3.....	1.....	40
	Fluorophosphoric acid anhydrous.....	8	UN1776	II	CORROSIVE.....	B2, N8, N11, N26, N34, T19, T27.	None	202	242	1 L.....	30 L.....	1.2.....	1.2.....	
	Fluorosilicates, n.o.s.....	6.1	UN2856	III	KEEP AWAY FROM FOOD.	153	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....	26, 34	
	Fluorsilicic acid.....	8	UN1778	II	CORROSIVE.....	B2, B15, N3, N11, N26, N34, T12, T27.	None	202	242	1 L.....	30 L.....	1.2.....	1.2.....	
	Fluorotoluenes.....	8	UN1777	I	CORROSIVE.....	B41, B4, B6, N1, N3, N11, N26, N35, T12, T27.	None	201	242	0.5 L.....	2.5 L.....	1.....	5.....	33, 40
	Forbiden materials. See 173.21.....	3	UN2988	II	FLAMMABLE LIQUID.	B1, T8.....	150	202	242	5 L.....	60 L.....	1.3.....	1.....	40
	Formaldehyde, solutions, flammable.....	3	UN1198	III	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	1.3.....	1.3.....	40
	Fluoroboric acid.....	3	UN1198	II	FLAMMABLE LIQUID.	B1, T8.....	150	203	242	60 L.....	220 L.....	1.3.....	1.3.....	40

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing group	Labels	Special provisions	(8) Packaging authorizations (§ 375, ...)			(9) Quantity limitations			Vessel stowage requirements (10)		
							Excep- tions		Bulk pack- aging	Passenger aircraft or aircar		Cargo aircraft only			
							(8A)	(8B)	(8C)	(8A)	(8B)	(8C)			
(1)	Glycerol lactate nitrate.....	Forbid- den	6.1	UN2889	II KEEP AWAY FROM FOOD.	T2.....	153	203	241	60 L.....	220 L.....	1,2.....	34		
	Glycerol alpha-monochlorhydrin.....			3	UN2622	II FLAMMABLE LIQUID. POISON.	T8.....	150	202	243	1 L.....	60 L.....	1,3.....	40	
	Grenades, hand or rifle, with bursting charge,.....				1.1D	UN0284									
	Grenades, hand or rifle, with bursting charge,.....				1.2D	UN0285									
	Grenades, hand or rifle, with bursting charge,.....				1.1F	UN0292									
	Grenades, hand or rifle, with bursting charge,.....				1.2F	UN0293									
	Grenades, illuminating, see Ammunition, illuminating, etc.				1.4G	UN0452									
	Grenades, practice, hand or rifle.....				1.4S	UN0110									
	Grenades, practice, hand or rifle.....				1.3G	UN0318									
	Grenades, practice, hand or rifle.....				1.2G	UN0372									
	Grenades, smoke, see Ammunition, smoke, etc.				5.1	UN1467	III OXIDIZER	152	213	240	25 kg.....	100 kg.....	1,2.....	73	
	Guaridine nitrate.....				Forbid- den										
	Guarany nitrosaminoguanidinediethylenedihydrazine (dry), wetted with not less than 30 per cent water by weight.				1.1A	UN0113									
	Guarany nitrosaminoguanidinediethylenedihydrazine (dry), wetted with not less than 30 per cent water by weight, or mixture of alcohol and water.				Forbid- den										
	Gunpowder, compressed or Gunpowder in pellets, see Black powder (UN 0028).				UN0114										
	Gunpowder, granular or as a meal, see Black powder (UN 0027).														
	Guthion. See Azinphos methyl.....														
D	Guutta percha solution.....				3	UN1205	II FLAMMABLE LIQUID.	T7, T30.....	150	202	242	60 L.....	1,3.....	1	
	Hafnium powder, dry (a) mechanically produced, particle size between 3 and 53 microns; (b) chemically produced, particle size between 10 and 840 microns.				4.2	UN2545	III FLAMMABLE LIQUID.	B1, T7, T30, A19, A20, N34.	150	203	242	60 L.....	1,3.....	5.....	
							II SPONTANE- OUSLY COMBUSTI- BLE.		None	212	241	15 kg.....	50 kg.....	1	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing group	Labels	Special provisions	(8) Packaging authorizations (§ 173.11)			Quantity limitations	Vessel stowage requirements (10)	
							Non- Except- ions	Bulk bulk- Packing	Passenger aircraft or rafcar	Cargo aircraft only	Cargo vessel	Pas- enger vessel	Other stowage provisions
(1)	Hatinum powder, wetted with not less than 25 per cent water (a visible excess of water must be present) (a) mechanically produced, particle size less than 55 microns; (b) chemically produced, particle size less than 840 microns.	4.1	UN1326	II FLAMMABLE SOLID.	A19, A20, N11, N34.	None	212	241	15 kg..... 50 kg.....	1,3..... 1,3.....	5..... 5.....	23, 40, 95
(1)	Halogenated irritating liquids, n.o.s.	6.1	UN1610	I POISON..... II POISON..... III KEEP AWAY FROM FOOD.	T42..... T14..... T14.....	None	201	243	Forbidden....	1..... 1..... 1.....	5..... 5..... 5.....	23, 40, 95
(1)	Hand signal device, see Signal devices, hand.						166	203	241	No limit.....	No limit.....	1,2..... 1,2.....
D	Hazardous substance, liquid, n.o.s., or ORM-E	NA9188	III	None.....		156	213	240	No limit.....	No limit.....	1,2..... 1,2.....	
D	Hazardous substance, liquid, n.o.s., or ORM-E, liquid, n.o.s..	NA9189	III	None.....		156	203	241	No limit.....	No limit.....	1,2..... 1,2.....	
D	Hazardous substance, solid, n.o.s., or ORM-E, solid, n.o.s..	NA9189	III	None.....		156	213	240	No limit.....	No limit.....	1,2..... 1,2.....	
D	Hazardous waste, liquid, n.o.s..	UN1046	II NONFLAMMA- BLE GAS.	None..... B13.....		306	302	244	75 kg..... 150 kg.....	150 kg..... 150 kg.....	1,3..... 1,3.....	
	Helium-oxygen mixture, see Rare gases and oxygen mixtures.						320	316	318	50 kg..... 500 kg.....	500 kg..... 500 kg.....	1,3..... 1,3.....
	Helium, refrigerated liquid (cryogenic liquid)	2.2	UN1963	III NONFLAMMA- BLE GAS.	B1, T1	150	203	242	60 L..... 220 L.....	220 L..... 220 L.....	1,2..... 1,2.....	
	n-Heptaldehyde		3	UN3056	II FLAMMABLE LIQUID.	T2	150	202	242	5 L..... 60 L.....	60 L..... 60 L.....	1..... 1.....
	Heptanes		3	UN1206	II FLAMMABLE LIQUID.	T8	150	202	242	5 L..... 60 L.....	60 L..... 60 L.....	1..... 1.....
	n-Heptene		3	UN2278	II FLAMMABLE LIQUID.	T8	153	203	241	60 L..... 220 L.....	220 L..... 220 L.....	1,2..... 1,2.....
	Hexachloroacetone		6.1	UN2661	III KEEP AWAY FROM FOOD.	T8	153	203	241	60 L..... 220 L.....	220 L..... 220 L.....	1,2..... 1,2.....
	Hexachlorobenzene		6.1	UN2729	III KEEP AWAY FROM FOOD.	T7	153	203	241	60 L..... 220 L.....	220 L..... 220 L.....	1,2..... 1,2.....
	Hexachlorobutadiene		6.1	UN2279	III KEEP AWAY FROM FOOD.	T7	153	203	241	60 L..... 220 L.....	220 L..... 220 L.....	1,2..... 1,2.....
	Hexachlorocyclopentadiene		6.1	UN2646	I POISON.....	10, 814, B32.	None	227	244	Forbidden....	1..... 1.....	40, 95
	Hexachlorophene		6.1	UN2875	III KEEP AWAY FROM FOOD.		153	213	240	100 kg..... 30 L.....	200 kg..... 1.....	1,2..... 1,1.....
	Hexadecyltrichlorosilane		8	UN1781	II CORROSIVE	B2, B6, N26, N34, T8,	None	202	242	Forbidden....	1..... 1.....	40
	Hexadiene		3	UN2458	II FLAMMABLE LIQUID.	T7	None	202	242	5 L..... 60 L.....	1,3..... 1,3.....	12
	Hexaethyl tetraphosphate and compressed gas mixtures.	2.3	UN1612	I POISON GAS	B14, B31, 10.	None	334	244	Forbidden....	1..... 1.....	40, 95	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	Packaging authorizations (§ 17300*)			Quantity limitations			Vessel storage requirements (10)				
							(5)	(6)	(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)	(10C)
(1)	Hexethyl tetraphosphate, liquid	6.1	UN1611	I II III	POISON POISON KEEP AWAY FROM FOOD.	A4 N76 N77	None None None	201 202 203	243 243 241	1 L 5 L 60 L	30 L 60 L 220 L	12 12 12	1.2 1.2 1.2	5 5 5	40, 95 40, 95 34, 40		
	Hexethyl tetraphosphate mixture, see Organophosphorus pesticide etc.	6.1	UN1611	I II III	POISON POISON KEEP AWAY FROM FOOD.	N76 N77	None None	211 212 153	242 242 240	Forbidden 100 kg 100 kg	15 kg 200 kg	1.2 1.2 1.2	1.2 1.2 1.2	5 5 5	95 95 34		
	Hexethyl phosphorous pesticide, solid																
	Hexafluoroacetone	2.3	UN2420	I	POISON	N76	None	304	244	Forbidden	1	5	5	40, 95			
	Hexafluoroacetone hydrate	6.1	UN2552	II	POISON	B14, B31, 10.	None	202	243	5 L	60 L	1.2	1.2	40, 95			
	Hexafluoroethane	2.2	UN293	II	NONFLAMMABLE GAS	B13	None	306	244	75 kg	150 kg	1.3	1.3	85			
	Hexafluorophosphoric acid	8	UN1782	II	CORROSIVE	B2, N3, N11, N26, N34, T9, T22.	None	202	242	1 L	30 L	1.2	1.2	1.2			
	Hexafluoropropene	2.2	UN1958		NONFLAMMABLE GAS	B13	None	306	304	75 kg	150 kg	1.3	1.3	85			
D	Hexahydropropylene oxide	2.2	NA1956	III	NONFLAMMABLE GAS	B13	None	306	304	75 kg	150 kg	1.3	1.3	85			
	Hexaldehyde	3	UN1207	III	FLAMMABLE LIQUID	T1	150	203	242	60 L	220 L	1.3	1.3				
	Hexamethylenediamine, solid	8	UN2280	III	CORROSIVE, CORROSIVE	T8	None	154	213	242	25 kg	100 kg	1.3	1.3	12		
	Hexamethylenediamine solution	8	UN1783	II	CORROSIVE, POISON	T14	None	202	243	1 L	30 L	1.2	1.2	1.2			
	Hexamethylenediisocyanate	6.1	UN2281	II	POISON	T8	None	202	243	5 L	60 L	1.2	1	13, 40,			
	Hexamethyleneimine	3	UN2493	II	FLAMMABLE LIQUID, CORROSIVE					1 L	5 L	1.3	1	95			
	Hexamethylene triperoxide diamine (dry)																
	Hexamethyl benzene hexanitrate																
	3,3,6,6,9,9-Hexamethyl-1,2,4,5-tetraoxacyclonanone, not more than 52 per cent in solution.	5.2	UN2167	II	ORGANIC PEROXIDE			-152	225	None	10 L	1	5	12, 40			
	3,3,6,6,9,9-Hexamethyl-1,2,4,5-tetraoxacyclonanone, not more than 52 per cent with inert solid.	5.2	UN2168	II	ORGANIC PEROXIDE			-152	225	None	10 kg	1	5	12, 40			
	3,3,6,6,9,9-Hexamethyl-1,2,4,5-tetraoxacyclonanone, technically pure.	4.1	UN1328	III	FLAMMABLE SOLID	A1		151	213	240	25 kg	100 kg	1.3	1.3			
	Hexanes	3	UN1208	II	FLAMMABLE LIQUID	T8		150	202	242	5 L	60 L	1.3	5	12		

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations [§173, ***]		Quantity limitations		Vessel stowage requirements	
							(8) Packaging authorizations Non-bulk packing (BB)	(8A) Bulk packing (BC)	(9) Passenger aircraft or airliner	(9A) Cargo aircraft only	(10) Cargo vessel	(10A) Passenger vessel	(10B) Other stowage provisions
(1)	<i>Hexanitroazoxy benzene.....</i> <i>2,2',4,4',6,6'-Hexanitro-3,3'-(dihydroxyazobenzene (dry)).</i> <i>2,2',3,4,4',6-Hexanitrodiphenylamine.....</i>	Forbid- den Forbid- den Forbid- den	1.1D UN0079									
	<i>Hexanitrodiphenylamine (Dipiclylamine; 1-Hexyl).</i> <i>2,3',4,4',6,6'-Hexanitrodiphenylether.....</i>	Forbid- den Forbid- den Forbid- den Forbid- den Forbid- den										
	<i>N,N'-Cheranitrodiphenyl ethylene dinitra- mine (dry).</i> <i>Hexanitrodiphenyl urea.....</i>	Forbid- den Forbid- den Forbid- den Forbid- den										
	<i>Hexanitroethane</i>	Forbid- den	1.1D UN0392									
	<i>Hexanitrostilbene.....</i> <i>Hexanoic acid, see Corrosive liquid, n.o.s.</i> <i>Hexanolis</i>	1.1D 3 3	UN2282 UN0393 UN2370	III FLAMMABLE LIQUID. II FLAMMABLE LIQUID.	B1, T1..... T8.....	150 202	242 242	60 L..... 5 L.....	220 L..... 60 L.....	1,3..... 1,3.....	5..... 5.....	12
	<i>Hexagonal, cast.....</i> <i>1-Hexanes</i>											
	<i>Hexogen, see Cyclotrimethylenetrinitra- mine, etc.</i> <i>Hexolite, dry or wetted a less than 15 per cent water, by weight.</i> <i>Hexyl, see Hexanitrodiphenylamine.....</i>	1.1D 1.1D 8	UN0118 UN1784				II	CORROSIVE..... B2, B6, N16, N26, N34, T8, T26.	None 202	242 Forbidden	30 L..... 1.....	1..... 1.....
	<i>High explosives, see individual explosives'</i> <i>HNX, see Cyclotetramethylene-tetranitra- mine, etc.</i> <i>Hydrazine, anhydrous or Hydrazine aque- ous solutions with more than 64 per cent hydrazine, by weight.</i>											
	<i>Hydrazine azide</i> <i>Hydrazine chloride</i>	Forbid- den Forbid- den	3	UN2029	I	FLAMMABLE LIQUID. POISON, CORROSIVE.	B16, B17, B24, N1, N11, N26, N35, T25.	None	201 243	Forbidden 2.5 L.....	1..... 1.....	5..... 40

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	Packaging authorizations (§173...)		Quantity limitations		Vessel stowage requirements (10)	Other stowage provisions (10C)
							Non-bulk packing agings	Bulk packing	Passenger aircraft only	Cargo aircraft only	Cargo vessel	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8C)	(9B)	(9A)	(10A)	
	<i>Hydrazine dicarbonate diazide.</i>											
	Hydrazine hydrate or Hydrazine aqueous Solutions, with not more than 64 per cent hydrazine, by weight.	8	UN2030	II	CORROSIVE, POISON.	B16, B17, B24, T15.	None	202	243	Forbidden	30 L..... 1 L.....	5..... 1.....
	<i>Hydrazine perchlorate.</i>											
	<i>Hydrazine selenate.</i>											
	Hydrides, metal, n.o.s.	4.3	UN1409	II	DANGEROUS WHEN WET.	A19, N34 ..	None	211	242	Forbidden	15 kg..... 1 L.....	5..... 1.....
	<i>Hydrochloric acid, anhydrous, see Hydrogen iodide, anhydrous.</i>											
	Hydrochloric acid, solution.	8	UN1787	II	CORROSIVE	B2, N1, N11, N16, N34, N41, T8, T27.	154	202	242	1 L..... 30 L.....	1..... 1.....	22
	<i>Hydrobromic acid, anhydrous, see Hydrogen bromide, anhydrous.</i>											
	Hydrobromic acid solution, more than 49 per cent strength.	8	UN1788	II	CORROSIVE	B4, B15, N1, N11, N16, N34, N41.	None	201	242	Forbidden	1 L..... 1 L.....	68, 33
	<i>Hydrobromic acid solution, not more than 49 per cent strength.</i>											
	Hydrocarbon gases, compressed, n.o.s. or Hydrocarbon gases mixtures, compressed, n.c.s.	2.1	UN1964		FLAMMABLE GAS.	B13.....	306	302	244	Forbidden	150 kg..... 1 L.....	13..... 1.....
	Hydrocarbon gases, liquefied, n.o.s. or Hydrocarbon gases mixtures, liquefied, n.o.s.	2.1	UN1965		FLAMMABLE GAS.	B13.....	306	304	244	Forbidden	150 kg..... 1 L.....	13..... 1.....
	<i>Hydrocyanic acid, anhydrous, see Hydrogen cyanide.</i>											
	Hydrocyanic acid, solution.	8	UN1789	II	CORROSIVE	B2, B8, S15, N1, N34, N41, T8, T27.	154	202	242	1 L..... 30 L.....	1..... 1.....	83, 33

Hydrocyanic acid, anhydrous, see Hydrogen cyanide.

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing group	Labels	Special provisions	(8) Packaging authorizations (§173.***)		Quantity (9)	Vessel limitations (10)	Vessel stowage requirements (10C)			
							Passenger aircraft or rafcar	Bulk packag- ing						
(1)	Hydrocyanic acid, aqueous solutions less than 5% HCN. Hydrocyanic acid, aqueous solutions not more than 20% HCN. Hydrocyanic acid, liquefied, see Hydrogen cyanide, etc. Hydrofluoric acid and Sulfuric acid mixtures...	6.1	UN1613 UN1613 UN1613 UN1786	II II I I	POISON..... POISON..... CORROSIVE, POISON..... CORROSIVE, POISON.....	B12, T18, T26, B14, B92, 10, None B15, B23, N5, N11, N26, N34, T18, T27, None B4, B12, B15, B23, N5, N11, N26, N34, T18, T27, None B12, B15, N5, N11, N26, N34, T18, T27, None	195 195 201 201	243 244 243 243	Forbidden..... Forbidden..... Forbidden..... Forbidden.....	5 L..... 5 L..... 2.5 L..... 2.5 L.....	1..... 1..... 1..... 1.....	5..... 5..... 5..... 5.....	40 40, 95 33, 40 12	
	Hydrofluoric acid, anhydrous, see Hydrogen fluoride, anhydrous. Hydrofluoric acid, solution, more than 60 per cent strength.	8	UN1790	II	CORROSIVE, POISON.....	T18, T27, None T18, T27, None	201	243	0.5 L.....	0.5 L.....	1.....	5.....	12	
	Hydrofluoric acid, solution, not more than 60 per cent strength.	8	UN1790	II	CORROSIVE, POISON.....	N5, N11, N26, N34, T18, T27, None	202	243	1 L.....	30 L.....	1.....	5.....	12	
	Hydrofluoroboric acid, see Fluoroboric acid. Hydrofluorosilicic acid, see Fluorsilicic acid.													
	Hydrogen and Methane mixtures, compressed.	2.1	UN2084	II	FLAMMABLE GAS.....	B13.....	306	302	244	Forbidden.....	150 kg.....	1.3.....	5.....	40, 85
	Hydrogen bromide, anhydrous.	2.3	UN1048	II	POISON GAS, CORROSIVE.	B13, B14, B33, 10, None	304	304	244	Forbidden.....	1.....	5.....	5.....	40, 95
	Hydrogen chloride, anhydrous.	2.3	UN1050	II	POISON GAS, CORROSIVE.	B13, B24, 10,	304	304	244	Forbidden.....	1.....	5.....	5.....	34, 40, 95
	Hydrogen chloride, refrigerated liquid.	2.3	UN2186	II	POISON GAS, CORROSIVE, FLAMMABLE GAS.	10, B8, B49, B13.....	None	None	314, 315	Forbidden.....	1.3.....	4.....	40	
	Hydrogen, compressed.	2.1	UN1049	II	POISON, FLAMMABLE LIQUID: POISON.....	10, B12, B14, B20, B12.....	306	302	244	Forbidden.....	150 kg.....	1.3.....	5.....	40, 57, 85
	Hydrogen cyanide, anhydrous, stabilized, absorbed in a porous inert material.	6.1	UN1051	I	POISON, FLAMMABLE LIQUID: POISON.....	None	195	243	Forbidden.....	1.....	5.....	5.....	21, 25, 40, 95	
	Hydrogen cyanide, anhydrous, stabilized, absorbed in a porous inert material.	6.1	UN1614	I	POISON, FLAMMABLE LIQUID: POISON.....	None	195	243	Forbidden.....	1.....	5.....	5.....	25, 40, 95	

(1)	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	Packaging authorizations (8) (873***)			Quantity limitations (9)			Vessel storage requirements (10)	Other storage provisions (10C)
							Non-bulk packaging	Bulk packaging	Passenger aircraft or trailer	Cargo aircraft only	Cargo vessel	Pasenger vessel		
	Hypochlorite solutions with more than 5 per cent but less than 16 per cent available chlorine. Hypochlorite solutions with not less than 16 per cent available chlorine.	8	UN1781	III	CORROSIVE.....	N34, T7.....	154	203	241	5 L.....	60 L.....	1.2.....	1.....	
	Hyponitrous acid.....	8	UN1791	II	CORROSIVE.....	B2, B15, B37, N26, N34, T7.	154	202	242	1 L.....	30 L.....	1.2.....	1.....	
	Igniter for aircraft thrust device for assisted take-off. Igniter fuse, metal clad, see Fuse, igniter, tubular, metal clad.	4.1	UN2792	II	FLAMMABLE SOLID.		None	180	None	Forbidden.....	50 kg.....	1.3.....	5.....	
	Igniters.....	1.1G	UN0121											
	Igniters.....	1.2G	UN0314											
	Igniters.....	1.3G	UN0315											
	Igniters.....	1.4G	UN0325											
	3,3'-Aminodipropylamine, see 3,3'-aminodipropylamine.	8	UN2269	III	CORROSIVE.....	T8.....	154	203	241	5 L.....	60 L.....	1.2.....	12.....	
	Infectious substances, affecting animals only (See also Etiologic agent, n.o.s.). Infectious substances, affecting humans (See also Etiologic agent, n.o.s.). Inflammable, see Flammable.....	6.2	UN2990		INFECTIOUS SUBSTANCE.....		196	196	None	50 ml or 50 g.....	4 L or 4 kg.....	5.....	5.....	
	Initiating explosives (dry).....	6.2	UN2814		INFECTIOUS SUBSTANCE.....		196	196	None	50 ml or 50 g.....	4 L or 4 kg.....	5.....	5.....	
	Ink, printer's, flammable.....	3	UN1210	II	FLAMMABLE LIQUID.	T7, T30,.....	150	173	242	5 L.....	60 L.....	1.3.....	1.....	
	Inositol hexanitrate (dry).....			III	FLAMMABLE LIQUID.	B1, T7, T30.	150	173	242	60 L.....	220 L.....	1.3.....	1.3.....	
	Insecticide gases, n.o.s.....	2.2	UN1968		NONFLAMMABLE GAS.	B13.....	306	304	244	75 kg.....	150 kg.....	1.3.....	85.....	
	Insecticide gases, toxic, n.o.s.....	2.3	UN1967	I	POISON GAS	10.....	None	196,	245	Forbidden.....	Forbidden.....	1.....	5.....	
	Insulin trinitrate (dry).....												25, 40, 95.....	
	Iodine azide (dry).....													
	Iodine monochloride.....													
	Iodine pentafluoride.....													
	2-Isobutobutane.....	3	UN2380	II	OXIDIZER, POISON, LIQUID.		150	202	242	Forbidden.....	2.5 L.....	1.....	13, 40.....	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	(8) Authorizations		(9) Quantity limitations		Vessel stowage requirements							
							(5)	(6)	(7)	(8A)	(8B)	(8C)	(8D)	(9A)	(9B)	(10A)	(10B)	(10C)
(1)	Iodomethylpropanes.....	3	UN12391	II	FLAMMABLE LIQUID.	T8	150	202	242	5 L.....	60 L.....	1,3.....	1.....					
	Iodopropanes.....	3	UN12392	II	FLAMMABLE LIQUID.	T8	150	202	242	5 L.....	60 L.....	1,3.....	1.....					40
	Iodoxy compounds (dry).....			III	FLAMMABLE LIQUID.		150	203	241	60 L.....	220 L.....	1,2.....						
	Indium nitropentamine indium nitrate.....																	
	Iron chloride, see Ferric chloride.....																	
	Iron oxide, spelt, or iron sponge, spent (obtained from coal gas purification).....	4.2	UN1376	III	SPONTANEOUSLY COMBUSTIBLE.	B18.....	None	213	240	Forbidden....	Forbidden....	1,3.....	5.....					
	Iron pentacarbonyl.....	6.1	UN1994	I	POISON, FLAMMABLE LIQUID.	B14, B30, 10.	None	192	244	Forbidden....	Forbidden....	1.....	5.....					21, 25, 40, 95
	Iron sesquichloride, see Ferric chloride.....																	
	Initiating agents, see Tear gas substances, etc.....	2.1	UN1989	III	FLAMMABLE GAS.	T1	150	203	314, 315	Forbidden....	150 kg.....	1,3.....	1.....					40, 85
	Isobutane or isobutane mixtures see also Petroleum gases, liquified.	3	UN1212	III	FLAMMABLE LIQUID.	T1	150	202	242	5 L.....	60 L.....	220 L.....	1,3.....	1.....				
	Isobutanol or isobutyl alcohol.....																	
	Isobutyl acetate.....	3	UN1213	II	FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	60 L.....	1,3.....	1.....					
	Isobutyl acrylate.....	3	UN2527	III	FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....					
	Isobutyl alcohol, see Isobutanol.....																	
	Isobutyl aldehyde, see Isobutyraldehyde.....	3	UN1214	II	FLAMMABLE LIQUID.	T8	150	202	242	5 L.....	60 L.....	1,3.....	1.....					40
	Isobutylamine.....	2.1	UN1055	III	FLAMMABLE GAS.	T1	150	202	314, 315	Forbidden....	150 kg.....	1,3.....	1.....					40, 85
	Isobutylene see also Petroleum gases, liquefied.																	
	Isobutyl formate.....	3	UN2393	II	FLAMMABLE LIQUID.	T1	150	203	242	5 L.....	60 L.....	1,3.....	1.....					
	Isobutyl isobutyrate.....	3	UN2526	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....					
	Isobutyl isocyanate.....	3	UN2486	II	FLAMMABLE LIQUID, POISON.	T9	None	202	243	1 L.....	60 L.....	1.....	5.....					12, 40, 48
	Isobutyl methacrylate.....	3	UN2283	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....					
	Isobutyl propionate.....	3	UN2394	III	FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	220 L.....	1,3.....	1.....					
	Isobutylaldehyde or Isobutyl aldehyde.....	3	UN2045	II	FLAMMABLE LIQUID.	T8	150	202	242	5 L.....	60 L.....	1,3.....	5.....					12, 40
	Isobutyric acid.....	3	UN2529	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....					

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	(8) Packaging authorizations (§173.111)		(9) Quantity limitations		(10) Vessel stowage requirements	
							Exemptions	Bulk packaging (§85)	Cargo aircraft only	Cargo vessel	Pasenger vessel	Other stowage provisions
(1)	Isobutyric anhydride	(3)	3 UN2530	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....
	Isobutyronitrile	(2)	3 UN2284	II	FLAMMABLE LIQUID.	T17	None	202	243	1 L.....	60 L.....	1,3.....
	Isobutyl chloride	(3)	3 UN2395	II	FLAMMABLE LIQUID.	T9, T26	None	202	243	1 L.....	5 L.....	1.....
	Isocyanates, n.o.s., or Isocyanate solutions, n.o.s., boiling point not less than 30deg C.	(6.1)	3 UN2207	III	FLAMMABLE LIQUID. KEEP AWAY FROM FOOD.	T15	None	153	203	241	60 L.....	220 L.....
	Isocyanates, n.o.s., or Isocyanate solutions, n.o.s., flash point more than 60.5deg C. and boiling point less than 300deg C.	(6.1)	3 UN2206	II	POISON.....	T15	None	202	243	5 L.....	60 L.....	1,3.....
	Isocyanates, n.o.s., or Isocyanate solutions, n.o.s., flash point not less than 20deg C. but not more than 60.5deg C. and boiling point less than 300deg C.	(6.1)	3 UN2206	II	POISON FLAMMABLE LIQUID.	T15	None	202	243	5 L.....	60 L.....	1,3.....
	Isocyanates, n.o.s., or Isocyanate solutions, n.o.s., flash point less than 20deg C.	(3)	3 UN2478	I	FLAMMABLE LIQUID.	B40, N1, N26	None	201	243	1 L.....	60 L.....	1,3.....
	Isocyanatobenzotetrafluorides	(6.1)	3 UN2285	II	FLAMMABLE LIQUID.	N1, N26	None	202	243	1 L.....	60 L.....	1,3.....
	Isobutene	(3)	3 UN2287	II	FLAMMABLE LIQUID.	T14	None	202	243	5 L.....	60 L.....	1,2.....
	Isobutene	(3)	3 UN2288	II	FLAMMABLE LIQUID.	T7	None	150	202	242	5 L.....	60 L.....
	Isobutyl peroxide, see Di-(3,5-trimethylhexanoyl) peroxide.	(3)	3 UN1216	II	FLAMMABLE LIQUID.	T78	None	150	202	242	5 L.....	60 L.....
	Isopentane, see n-Pentane.									1,3.....	1.....	
	Isopentenic acid, see Comisive acids, n.o.s.		3 UN2371	I	FLAMMABLE LIQUID.	N15, T20	150	201	243	1 L.....	30 L.....	1,3.....
	Isopentenes		8 UN2289	III	CORROSIVE..... KEEP AWAY FROM FOOD.	T8	154	203	241	5 L.....	60 L.....	1,2.....
	Japhoronediamine		6.1 UN2290	III	FLAMMABLE LIQUID.	T8	153	203	241	60 L.....	220 L.....	1,2.....
	Japhoronedisocyanate		3 UN1218	I	FLAMMABLE LIQUID.	T20	150	201	243	1 L.....	30 L.....	1,3.....
	Isoprene, Inhibited		9 UN1219	II	FLAMMABLE LIQUID.	T1	150	202	242	5 L.....	60 L.....	1,3.....
	Isopropanol or Isopropyl alcohol		3 UN2403	II	FLAMMABLE LIQUID.	T1	150	202	242	6 L.....	60 L.....	1,3.....
	Isopropanyl acetate									1,3.....	1.....	

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Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations [§ 173, etc.]			Quantity limitations			Vessel storage requirements (10)	
							Packaging authorizations			Quantity limitations				
							Non-bulk packaging	Bulk packaging	Passenger aircraft or raircar	Cargo aircraft only	Cargo vessel	Pasenger vessel		
D	Lead phosphite, dibasic Lead picrate (dry) Lead styphnate (dry) Lead trinitroresorcinate, wetted with not less than 20 per cent water, by weight (or mixture of alcohol and water). Lead sulfite with more than 3 per cent free acid. Lead sulfide.	4.1 Forbiden Forbiden UN0130 1.1A	UN2989 II FLAMMABLE SOLID.	(3) (4) (5) (6) (7)	(8A) None	(8B) 212	(8C) 240	(8D) 5 (g.....)	(8E) 25 kg.....	(8F) 1.3.....	(8G) 1.....	34		
D	Lead styphnate, see Lead styphnate, etc. Life-saving appliances, not self inflating containing hazardous materials as equipment. Life-saving appliances, self inflating Lighter replacement cartridges containing liquefied petroleum gases (and similar devices, each not exceeding 65 grams), see Lighters for cigars, cigarettes, etc. with flammable gas. Lighters for cigars, cigarettes, etc. with flammable gas; or flammable gas in lighters. Lighters for cigars, cigarettes, etc. with lighter fluids.	9 9 9 9 2.1	UN3072 UN2990 UN3072 UN3072 UN1057	II III KEEP AWAY FROM FOOD. CLASS 9..... CLASS 9.....	(7) None	(8A) 154	(8B) 212	(8C) 240	(8D) 15 kg.....	(8E) 50 kg.....	(8F) 1.2.....	(8G) 1.2.....	1.2.....	
D	Lime, unslaked, see Calcium oxide. Liquefied gases, non-flammable charged with nitrogen, carbon dioxide or air. Liquefied hydrocarbon gas, see Hydrocarbon gases, liquefied, n.o.s., etc. Liquefied natural gas, see Methane, etc. (UN 1972). Liquefied petroleum gas see Petroleum gases, liquefied. Lithium.	3 1.4S 2.2	NA1226 UN0131 UN1058	II FLAMMABLE LIQUID. NONFLAMMABLE GAS.	(7) None	(8A) 150	(8B) 202	(8C) None	(8D) 11 kg.....	(8E) 15 kg.....	(8F) 1.....	(8G) 1.....	40	
D	DANGEROUS WHEN WET.	4.3	UN1415	II	A19, N16, N26, N34, N45, 22.	None	212	None	50 kg.....	1.....	1.....	1.....	5.....	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (g) [§ 173.1]			Quantity limitations (g)			Vessel storage requirements (f)		
							(7)	(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)	(10C)
(1)	Lithium alkyls	4.2	UN2445	I	SPONTANEOUSLY COMBUSTIBLE, DANGEROUS WHEN WET.	A19.....WHEN WET.	None	181	244	Forbidden...	Forbidden...	1 L.....	1.....	5.....	
	Lithium aluminum hydride, etherate	4.3	UN1410	I	DANGEROUS WHEN WET.	A19.....WHEN WET.	None	201	242	Forbidden...	1 L.....	1.....	5.....	40.....	
D	Lithium amide.....	4.3	UN1412	II	DANGEROUS WHEN WET.	A2 NH, N16, N34, N40.	None	212	None	15 kg.....	50 kg.....	1.....	5.....		
	Lithium batteries	4.3	NA1415	II	DANGEROUS WHEN WET.	A19.....WHEN WET.	None	185	None	Forbidden...	35 kg.....	1,3.....	5.....		
	Lithium borohydride.....	4.3	UN1413	I	DANGEROUS WHEN WET.	A19.....WHEN WET.	None	211	242	Forbidden...	15 kg.....	1,3.....	5.....		
	Lithium ferrosilicon	4.3	UN2830	II	DANGEROUS WHEN WET.	A19.....WHEN WET.	None	212	241	15 kg.....	50 kg.....	1,3.....	5.....		
	Lithium hydride	4.3	UN1414	I	DANGEROUS WHEN WET.	A19, A20, N2.	None	211	242	Forbidden...	15 kg.....	1.....	5.....		
	Lithium hydride, fused solid.....	4.3	UN2805	II	CORROSIVE.....WHEN WET.	B2, T6.....N13, N34..	154.....152	212.....212	240.....None	15 kg.....5 kg.....	50 kg.....30 L.....25 kg.....	1,2.....1,2.....1,2.....	96.....		
	Lithium hydroxide, monohydrate	8	UN2680	II	CORROSIVE.....WHEN WET.	B2, T6.....N13, N34..	154.....152	202.....212	242.....None	15 kg.....5 kg.....	50 kg.....30 L.....25 kg.....	1,2.....1,2.....1,2.....	96.....		
	Lithium hydroxide, solution.....	8	UN2879	II	CORROSIVE.....WHEN WET.	B2, T6.....N13, N34..	154.....152	202.....212	242.....None	15 kg.....5 kg.....	50 kg.....30 L.....25 kg.....	1,2.....1,2.....1,2.....	96.....		
	Lithium hypochlorite, dry or Lithium hypochlorite mixtures.	5.1	UN1471	II	OXIDIZER.....WHEN WET.	A1.....A19.....A19, A20..	152.....None	213.....211	240.....242	25 kg.....15 kg.....	100 kg.....15 kg.....	1,2.....1,2.....1,2.....	5.....		
	Lithium nitrate	5.1	UN2722	I	OXIDIZER.....WHEN WET.	A1.....A19.....A19, A20..	152.....None	212.....212	None.....None	5 kg.....5 kg.....	25 kg.....50 kg.....	1,2.....1,2.....1,3.....	13.....		
	Lithium nitride	4.3	UN2806	I	OXIDIZER.....WHEN WET.	A1.....A19.....A19, A20..	152.....None	212.....212	None.....None	5 kg.....5 kg.....	25 kg.....50 kg.....	1,2.....1,2.....1,3.....	13.....		
	Lithium peroxide	5.1	UN1472	II	OXIDIZER.....WHEN WET.	A1.....A19.....A19, A20..	152.....None	212.....212	None.....None	5 kg.....5 kg.....	25 kg.....50 kg.....	1,2.....1,2.....1,3.....	13.....		
	Lithium silicon	4.3	UN1417	II	OXIDIZER.....WHEN WET.	A1.....A19.....A19, A20..	152.....None	212.....212	None.....None	5 kg.....5 kg.....	25 kg.....50 kg.....	1,2.....1,2.....1,3.....	13.....		
	LNG, see Methane etc. (UN 1972)	6.1	UN1621	II	POISON.....	.....	.....	212	242	25 kg.....	100 kg.....	1,2.....	95.....	
	London Purple	4.1	UN1869	III	FLAMMABLE SOLID.	A1.....	151	213	240	25 kg.....	100 kg.....	1,3.....	39.....		
	LPG, see Petroleum gases, liquefied Live, see Sodium hydroxides, solutions Magnesium or Magnesium alloys with more than 50 per cent magnesium in pellets, turnings or ribbons.	4.2	UN3053	I	SPONTANEOUSLY COMBUSTIBLE, DANGEROUS WHEN WET.	B11, T28, T42.	None	181	244	Forbidden...	Forbidden...	1.....	5.....	18.....	
	Magnesium aluminum phosphide	4.3	UN1419	I	DANGEROUS WHEN WET.	A19, N34 ..	None	211	242	Forbidden...	15 kg.....	1,3.....	5.....	40, 85.....	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica-tion numbers	Pack-ing group	Labels	Special provisions	(8) Packaging authorizations (1173,***)		(9) Quantity limitations		Vessel storage requirements	
							Exception-s	Bulk-packing	Passenger aircraft or railcar	Cargo aircraft only	(10A)	(10B)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(8C)	(8A)	(8B)	(10A)	(10B)
	Manganese resinate.....	4.1	UN1330	III	FLAMMABLE SOLID.	A1.....	151	213	240	25 kg.....	100 kg.....	1,3.....
	Mannitite tereznitate.....	4.1	Forbid-den	Forbid-den								
	Mannitol hexanitrate (dry).....	4.1	UN2554	III	FLAMMABLE							
	With not less than 40 per cent water by weight or mixture of alcohol and water.	4.1	UN1944	III	SOLID.		186	186	None	25 kg.....	100 kg.....	1,3.....
	Matches, block, see Matches, 'strike anywhere'.....	4.1	UN1331	III	FLAMMABLE SOLID.			186	186	None	Forbidden....	1,3.....
	Matches, 'strike anywhere'.....	4.1	UN1945	III	FLAMMABLE SOLID.			186	186	None	25 kg.....	100 kg.....
	Matches, wax, "Vesta".....	6	UN1851	II	CORROSIVE	B2.....	154	202	242	1 L.....	30 L.....	1,2.....
	Medicines, corrosive, liquid, n.o.s.	6	UN1851	III	CORROSIVE		154	203	241	5 L.....	60 L.....	1,2.....
	Medicines, corrosive, solid, n.o.s.	6	UN1851	II	CORROSIVE		154	212	240	15 kg.....	50 kg.....	1,2.....
	Medicines, flammable, liquid, n.o.s.	3	UN1851	III	FLAMMABLE		154	213	240	25 kg.....	100 kg.....	1,2.....
	Medicines, flammable, solid, n.o.s.	4.1	UN1851	I	Liquid.		150	201	243	1 L.....	30 L.....	1,3.....
	Medicines, liquid, n.o.s.	6.1	UN1851	II	FLAMMABLE LIQUID.		150	202	242	5 L.....	60 L.....	1,3.....
	Medicines, liquid, n.o.s.	6.1	UN1851	III	FLAMMABLE LIQUID.		150	203	242	60 L.....	220 L.....	1,3.....
	Medicines, liquid, n.o.s.	6.1	UN1851	II	Liquid.		150	203	242	60 L.....	220 L.....	1,3.....
	Medicines, liquid, n.o.s.	6.1	UN1851	II	FLAMMABLE		151	212	240	15 kg.....	50 kg.....	1,3.....
	Medicines, liquid, n.o.s.	6.1	UN1851	II	SOLID.		152	212	240	5 kg.....	25 kg.....	1,3.....
	Medicines, oxidizing substance, solid, n.o.s.	5.1	UN1851	II	OXIDIZER		153	201	243	1 L.....	30 L.....	1,2.....
	Medicines, oxidizing substance, solid, n.o.s.	6.1	UN1851	II	Poison		153	202	243	5 L.....	60 L.....	1,2.....
	Medicines, poison, liquid, n.o.s.	6.1	UN1851	II	Poison		153	203	241	60 L.....	220 L.....	1,2.....
	Medicines, poison, solid, n.o.s.	6.1	UN1851	II	KEEP AWAY FROM FOOD.		153	211	242	5 kg.....	50 kg.....	1,2.....
	Medicines, poison, solid, n.o.s.	6.1	UN1851	II	Poison		153	212	242	25 kg.....	100 kg.....	1,2.....
	Medicines, poison, solid, n.o.s.	6.1	UN1851	III	KEEP AWAY FROM FOOD.		153	213	240	100 kg.....	200 kg.....	1,2.....
	Membrane hydrophthalic anhydrides, see Corrosive liquids, n.o.s.										5 L.....	5 L.....
	p-Menthane hydroperoxide, see p-Menthyl hydroperoxide, technically pure.	5.2	UN2125	I	ORGANIC PEROXIDE.	B21, Tg, T35,	None	225	243	1 L.....	1 L.....	12, 40
	p-Menthyl hydroperoxide, technically pure.	6.1	UN3074	I	Poison.	B40, T42..	None	202	243	1 L.....	30 L.....	1,2.....
	Mercaptans, liquid n.o.s. or Mercaptan mixtures, liquid, n.o.s., flash point not less than 230deg C.										1 L.....	1 L.....

(1) Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Pack- ing group	Labels	Special provisions	(5) Packaging authorizations (373...)		(6) Quantity limitations		(10) Vessel storage requirements		
							(6A)	(6B)	(7)	(8)	(8A)	(8B)	(8C)
	Mercaptans, liquid, n.o.s. or Mercaptan mixtures, liquid, n.o.s.	3	UN1228	II	Poison, FLAMMABLE LIQUID.	T14.....	None	202	243	5 L.....	60 L.....	1,3.....	1.....
	5-Mercapto-tetraethyl-acetic acid	1.4C	UN0448	III	KEEP AWAY FROM FOOD, FLAMMABLE LIQUID. POISON.	T14.....	None	202	241	60 L.....	220 L.....	1,3.....	21
	Mercuric arsenate	6.1	UN1623	II	Poison.....	N16, T14...	None	202	243	Forbidden	60 L.....	1,3.....	5.....
	Mercuric chloride, see Mercury compounds, etc.	6.1	UN1624	II	Poison.....	.....	None	212	242	25 kg.....	100 kg.....	1,2.....	95
	Mercuric nitrate	6.1	UN1625	II	Poison.....	N73.....	None	212	242	25 kg.....	100 kg.....	1,2.....	95
	Mercury potassium cyanide	6.1	UN1625	I	Poison.....	N74, N75...	None	211	242	5 kg.....	50 kg.....	1,2.....	95
	Mercuric sulfate	6.1	UN1645	II	Poison.....	.....	None	212	242	25 kg.....	100 kg.....	1,2.....	95
	Mercuric suffocyanate, see Mercury thiocyanate.	6.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Mercury, see Mercury nucleate.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Mercurous azide, see Mercurous compounds, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Mercurous compounds, see Mercury compounds, etc.	8.1	UN1627	II	Poison.....	.....	None	212	242	25 kg.....	100 kg.....	1,2.....	95
	Mercurous nitrate	6.1	UN1628	II	Poison.....	.....	None	212	242	25 kg.....	100 kg.....	1,2.....	95
	Mercurous sulfate	8	UN2809	III	Corrosive.....	.....	164	240	242	25 L.....	2.5 L.....	1,2.....	1.....
	Mercury acetate	6.1	UN1629	II	Poison.....	.....	None	212	242	25 kg.....	100 kg.....	1,2.....	95
	Mercury acetylide	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Mercury ammonium chloride	6.1	UN1630	II	Poison, FLAMMABLE LIQUID. POISON,	.....	None	212	242	25 kg.....	100 kg.....	1,2.....	95
	Mercury based pesticides, liquid, flammable, toxic, n.o.s., flash point less than 23deg C.	8	UN2778	I	Poison, FLAMMABLE LIQUID. POISON,	.....	None	201	243	1 L.....	30 L.....	1,3.....	1.....
	Mercury based pesticides, liquid, toxic, n.o.s., flash point not less than 23deg C.	6.1	UN3011	II	Poison, FLAMMABLE LIQUID. POISON,	.....	None	202	243	6 L.....	50 L.....	1,2.....	1.....
	Mercury based pesticides, liquid, toxic, n.o.s.	6.1	UN3012	III	KEEP AWAY FROM FOOD.	.....	153	202	241	60 L.....	220 L.....	1,2.....	1.....
	Mercury based pesticides, liquid, toxic, n.o.s.	6.1	UN3012	I	Poison.....	.....	None	201	243	1 L.....	30 L.....	1.....	40, 95
	Mercury based pesticides, liquid, toxic, n.o.s.	6.1	UN3012	II	Poison.....	.....	None	202	243	5 L.....	60 L.....	1,2.....	1.....

(1) Sym-bols	Hazardous material descriptions and proper shipping names	Hazard class	Identifi-cation-numbers	Pack- ing group	Labels	Special provisions	(B) Packaging authoriza-tions § 1730.11			Quantity limitations			Vessel storage requirements (10)
							(6A)	(6B)	(6C)	(6D)	(6E)	(6F)	
A	Mercury based pesticides, solid, toxic, n.o.s.	6.1	UN2777	III	KEEP AWAY FROM FOOD, POISON	T14.....	153	203	241	60 L.....	220 L.....	1.2.....	34, 40
	Mercury benzoate.....	6.1	UN1631	II	POISON	.....	None	211	242	5 kg.....	50 kg.....	1.2.....	40, 95
	Mercury bisulfite.....	6.1	UN1633	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	40, 95
	Mercury bromides.....	6.1	UN1634	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	40, 95
	Mercury compounds, liquid, n.o.s.	6.1	UN2024	I	POISON	.....	None	201	243	1 L.....	30 L.....	1.2.....	40, 95
	Mercury compounds, solid, n.o.s.	6.1	UN2025	II	POISON	.....	None	202	243	5 L.....	60 L.....	1.2.....	40, 95
	Mercury cyanide, wetted with not less than 20 per cent water, or mixture of alcohol and water, by weight.	6.1	UN2809 UN1636 UN0135	II	POISON	N74, N75.....	153	213	240	100 kg.....	200 kg.....	1.2.....	34, 40
	Mercury contained in manufactured articles.....	6.1	UN1637 1.A	II	POISON	.....	None	164	None	No limit.....	No limit.....	1.2.....	40, 95
	Mercury cyanide.....	6.1	UN1638	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	34, 40
	Mercury fulminate, wetted with not less than 20 per cent water, or mixture of alcohol and water, by weight.	6.1	UN1638	II	POISON	.....	None	202	243	5 L.....	60 L.....	1.2.....	34, 40
	Mercury gluconate.....	6.1	UN1639	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	34, 40
	Mercury iodide, aqueous ammonium basic (iodide or nitron & base).	6.1	UN1640	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	34, 40
	Mercury iodide, solid.....	6.1	UN1641	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	34, 40
	Mercury nitride.....	6.1	UN1642	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	34, 40
	Mercury nucleate.....	6.1	UN1643	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	34, 40
	Mercury oleate.....	6.1	UN1644	II	POISON	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	34, 40
	Mercury oxide.....	6.1	UN1646	II	FLAMMABLE	B1, T1.....	3	UN1229	II	Liquid,	220 L.....	1.2.....	34, 40
	Mercury oxycyanide.....	4.2	UN3049	I	SPONTANE- OUSLY COMBUSTI- BLE, DANGEROUS WHEN WET.	B11.....	None	181	244	Forbidden....	1.....	5.....	26, 95

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica-tion numbers	Pack-ing group	Labels	Special provisions	Packaging authorizations		Quantity limitations	Vessel stowage requirements		
							(6)	(7)	(8A)	(8B)	(8C)	
(1)	Metal alkyl hydrides, n.o.s.....	4.2	UN3050	I	SPONTANE- OUSLY COMBUSTI- BLE, DANGEROUS WHEN WET.	B11.....	None	181	244	Forbidden....	1.....	
	Metal alkyls, n.o.s.....	4.2	UN2003	I	SPONTANE- OUSLY COMBUSTI- BLE, DANGEROUS WHEN WET.	B11.....	None	181	244	Forbidden....	1.....	
D	Metal alkyl, solution, n.o.s.....	3	NA9195	II	FLAMMABLE LIQUID.	150	202	242	1L.....	4 L.....	1.....	
	Metaldehyde	4.1	UN1332	III	FLAMMABLE SOLID.	A1.....	151	213	240	25 kg.....	100 kg.....	
	Metal salts of methyl nitramine (dry).....	Forbid-den	3	UN2396	II	FLAMMABLE LIQUID, POISON- CORROSIVE.	T8.....	None	202	243	1 L.....	
	Methacrylic acid, inhibited.....	8	UN2631	III	POISON, FLAMMABLE LIQUID.	154	203	241	5 L.....	60 L.....	1.....	
	Methacrylonitrile, inhibited.....	6.1	UN3079	I	FLAMMABLE LIQUID.	None	201	243	Forbidden....	Forbidden....	1.....	
	Methyl alcohol.....	3	UN2614	III	FLAMMABLE LIQUID.	T1.....	150	203	242	60 L.....	220 L.....	
	Methane and hydrogen, mixtures, see Hy-drogen and methane, mixtures, etc.						B13.....	306	302	244	Forbidden....	
	Methane, compressed or Natural gas, com-pressed (with high methane content).	2.1	UN1971	II	FLAMMABLE GAS.		None	316	318	150 kg.....	150 kg.....	
	Methane, refrigerated liquid or Natural gas, refrigerated liquid (with high methane Content) (cryogenic liquid).	2.1	UN1972	II	FLAMMABLE GAS.			319	318	1.....	1.....	
	Methanol or Methyl alcohol	3	UN1230	II	FLAMMABLE LIQUID, POISON.	T8.....	None	202	243	1 L.....	60 L.....	
	Methanoic acid.....	Forbid-den	3	UN2605	I	FLAMMABLE LIQUID, POISON.	B14, B30, 10.	None	226	244	Forbidden....	1.....
	Methoxymethyl isocyanate.....	3	UN2283	III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	
	4-Methoxy-4-methylpentan-2-one.....	3	UN1231	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	
	Methyl acetate.....	3	UN1232	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	
	Methyl acetylene and propadiene mixtures, stabilized.	2.1	UN1060		FLAMMABLE GAS.		305	304	314,	150 kg.....	1.....	

(1)	Symbol	Hazardous materials descriptions and proper shipping names	(2)	Identification numbers	Hazard class	Packing group	Labels	Special provisions	(8) Packaging authorizations (G73...)		(9) Quantity limitations		Vessel stowage requirements (10)
									(8A)	(8B)	(9A)	(9B)	
Methyl acrylate, inhibited.....	3	UN1919	I	II	FLAMMABLE	TB.....	150	202	242	5 L.....	50 L.....	1,2.....	40
Methylal.....	3	UN1234	I	II	LIQUID.	T14.....	None	202	242	Forbidden....	60 L.....	1,3.....	5.....
Methyl alcohol, see Methanol.....	3	UN2554	I	II	FLAMMABLE	T8.....	150	202	242	5 L.....	60 L.....	1,3.....	12
Methyl allyl chloride.....	2.3	UN1061	I	II	POISON GAS, FLAMMABLE GAS.	B33, 10.....	None	304	314	Forbidden....	60 L.....	1,3.....	12, 40
Methyamine, anhydrous.....	3	UN1235	I	II	FLAMMABLE LIQUID.	B1, T8.....	150	202	242	5 L.....	60 L.....	1,3.....	40
Methyamine, aqueous solution.....	3	UN1233	III	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	220 L.....	1,3.....	5.....	
Methyamine dinitramine and dry salts thereof.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12, 41
Methyamine nitroform.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Methyamine perchlorate (dry)	3	UN1233	III	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....	.....
Methyl acetate.....	6.1	UN2294	III	KEEP AWAY FROM FOOD.	T7.....	153	203	241	60 L.....	220 L.....	1,2.....	1,2.....	95
N,N-Methylaniline.....	6.1	UN2938	III	KEEP AWAY FROM FOOD.	T1.....	153	203	240	60 L.....	220 L.....	1,2.....	1,2.....	.....
Methyl benzoate.....	6.1	UN2937	III	KEEP AWAY FROM FOOD.	T1.....	153	203	241	60 L.....	220 L.....	1,2.....	1,2.....	.....
alpha-Methylbenzyl alcohol.....	6.1	UN1062	I	POISON GAS.....	B13, B14, B31, 10.....	None	193	244	Forbidden....	Forbidden....	1,3.....	5.....	40, 81, 85, 95
Methyl bromide.....	2.3	UN1647	I	POISON.....	B13, B14, B32, N65, 10.....	None	227	244	Forbidden....	Forbidden....	1.....	1.....	40, 95
Methyl bromide and chloropicrin mixtures with more than 2 per cent chloropicrin, see Chloropicrin and methyl bromide mixtures.	6.1	UN2643	I	POISON.....	T8.....	None	202	243	5 L.....	60 L.....	1.....	5.....	12, 40, 95
Methyl bromide and chloropicrin mixtures with not more than 2 per cent chloropicrin, see Methyl bromide.	3	UN2397	I	FLAMMABLE LIQUID.	T1.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....	.....
Methyl bromide and ethylene dibromide mixtures, liquid.	3	UN2561	I	FLAMMABLE LIQUID.	T20.....	None	201	243	1 L.....	30 L.....	1,3.....	5.....	.....
2-Methyl-1-butene.....	3	UN2459	I	FLAMMABLE LIQUID.	T14.....	None	201	243	1 L.....	30 L.....	1.....	1.....	12, 40

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Pack- ing group	Identifi- cation numbers	Labels	Special provisions	(6) Packaging authorizations (173...)		(8) Quantity limitations		(9) Vessel stowage requirements	
							(4)	(5)	(6)	(7)	(8A)	(8B)
2-Methyl-2-butene.....	II	3	UN2460	II	FLAMMABLE LIQUID.	T14.....	None	202	242	5 L.....	60 L.....	1,3.....
N-Methylbutylamine.....	II	3	UN2545	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	1,3.....
Methyl-tert-butylether.....	II	3	UN2398	II	FLAMMABLE LIQUID.	T14.....	150	202	242	5 L.....	60 L.....	1,3.....
Methyl butyrate.....	II	3	UN1237	II	FLAMMABLE LIQUID.	T1.....	150	202	242	5 L.....	60 L.....	1,3.....
Methyl chloride.....	II	2.3	UN1063	II	POISON GAS, FLAMMABLE GAS.	10, B13, B14.....	None	304	314,	ForbIDDEN.....	1,3.....	5.....
<i>Methyl chloride and chloroacetic mixtures. see Chloropicrin and methyl chloride mixtures.</i>								315				40, 85, 95
Methyl chloride and methylene chloride mixture.	II	2.1	UN1912	II	FLAMMABLE GAS, POISON.....	B13, B38,... T11.....	306	304	244	ForbIDDEN.....	150 kg.....	1,3.....
Methyl chloroacetate.....	II	6.1	UN2295	II	FLAMMABLE GAS, POISON.....		None	202	243	5 L.....	60 L.....	1,3.....
<i>Methyl chloroformate, see Methyl chloro- formate.</i>												40, 85, 95
<i>Methyl chloroform, see 1,1,1-Trichloroeth- ane.</i>												
Methyl chloroformate.....	I	3	UN1238	I	FLAMMABLE LIQUID, POISON, CORROSIVE.	B6, B14, B32, N1, N11, N26, N34, 10,	None	227	244	ForbIDDEN.....	1,3.....	5.....
Methylchloromethyl ether.....	I	3	UN1239	I	FLAMMABLE LIQUID, POISON.	B14, B32, 10,	None	227	244	ForbIDDEN.....	1.....	5.....
Methyl-2-chloropropionate	III	3	UN2933	III	FLAMMABLE LIQUID.	B1, T7.....	150	203	242	60 L.....	220 L.....	1,3.....
Methyl chlorosilane	I	2.3	UN2534	I	FLAMMABLE GAS, POISON GAS.	A2, B14, B30, Ni, N15, N26, N34, 10,	None	226	244	ForbIDDEN.....	1,3.....	40
Methyl cyanide.....	II	3	UN1648	II	FLAMMABLE LIQUID, POISON.	T14.....	None	202	243	1 L.....	60 L.....	1,3.....
Methyl Cyclohexane.....	II	3	UN2296	II	FLAMMABLE LIQUID.	B1, T1.....	150	202	242	5 L.....	60 L.....	1,3.....
Methyl cyclohexanol, flash point not more than 60.5 degrees C.	III	3	UN2617	III	FLAMMABLE LIQUID.	B1, T2.....	150	203	242	60 L.....	220 L.....	1,3.....
Methyl cyclohexanone.....	III	3	UN2297	III	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	220 L.....	1,3.....

Symbol	Hazardous materials descriptions and proper shipping names see Corrosive liquids, n.o.s.	Hazard class	Identification numbers	Pack- ing group	Labels	Special provisions	(8) Packaging authorizations §73.47		(9) Quantities limitations		(10) Vessel stowage requirements	
							(8A)	(8B)	(8C)	(8D)	(8E)	(8F)
(1)	Methyl norbornene dicarboxylic anhydride. see Corrosive liquids, n.o.s.	3	UN2606	I	FLAMMABLE LIQUID. POISON.	B14, B32, 10.	None	227	244	Forbidden....	Forbidden....	1,3..... 5..... 12, 40
D	Methyl parathion liquid.	6.1	NA2783	II	POISON.	N76..... N77..... T7.....	None	202	243	Forbidden....	1 L..... 25 kg..... 5 L.....	1,3..... 1,2..... 1,3..... 1,2..... 5..... 12
D	Methyl parathion solid.	6.1	NA2783	II	POISON.	N76..... N77..... T7.....	None	212	242	Forbidden....	100 kg..... 60 L.....	1,2..... 1,3..... 1,2..... 5..... 12
D	Methylpentadiene.	3	UN2461	II	FLAMMABLE LIQUID.	T7.....	150	203	242	60 L..... 220 L.....	1 L..... 30 L.....	1,3..... 1,3..... 1..... 13, 40
D	Methylpentanes, see Hexanes 2-Methylpentan-2-ol.	3	UN2560	II	FLAMMABLE LIQUID.	T8, T26..... B8, B25, B32,	154	202	242	1 L..... Forbidden....	1 L..... 1..... 1.....	1..... 1..... 1..... 1.....
D	Methylphenyl dichlorosilane.	8	UN2437	II	CORROSIVE.	N1, N15, N34, N43, 10.	None	227	244	Forbidden....	1 L..... 30 L.....	1..... 1..... 1..... 1.....
D	Methyl phosphonic dichloride.	8	NA9206	I	CORROSIVE, POISON.							
D	Methyl phosphonothioic dichloride, anhydrous, see Corrosive liquid, n.o.s..	6.1	NA2845	I	POISON, SPONTANEOUSLY COMBUSTIBLE, CORROSIVE.	B8, B14, B16, B32, 10.	None	181	244	Forbidden....	Forbidden....	1..... 5..... 18
D	Methyl phosphorous dichloride, pyrophoric liquid.											
D	Methyl picric acid (heavy metal salts of).											
1	1-Methylpiperidine.	3	UN2399	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L..... 60 L.....	1,3..... 1.....	1.....
Methyl propionate.	3	UN1248	II	FLAMMABLE LIQUID.	T2.....	150	202	242	5 L..... 60 L.....	1,3..... 1.....	1.....	
Methyl propyl ether.	3	UN2612	II	FLAMMABLE LIQUID.	T14.....	150	202	242	5 L..... 60 L.....	1,3..... 1.....	12, 40	
Methyl propyl ketone.	3	UN1249	II	FLAMMABLE LIQUID.	T1.....	150	202	242	5 L..... 60 L.....	1,3..... 1.....	1.....	
Methyl sulfate, see Dimethyl sulfate.	3	UN2536	II	FLAMMABLE LIQUID.	T7.....	150	202	242	5 L..... 60 L.....	1,3..... 1.....	1.....	
Methyl sulfide, see Dimethyl sulfide.	6.1	UN2533	III	KEEP AWAY FROM FOOD.	T1.....	153	203	241	60 L..... 220 L.....	1,2..... 1,2.....	34.....	
Methyl trichloroacetate.	3	UN1250	I	FLAMMABLE LIQUID, POISON, CORROSIVE.	B6, B14, B32, N26, N34, 10.	None	227	244	Forbidden....	1,3..... 1.....	40	

(1)	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Pack- ing group	Labels	Special provisions	(6) Packaging authorizations (G 73.)			(5) Quantity limitations			Vessel storage requirements (11Y)	Other storage provisions (10C)
							(7)	(8A)	(8B)	(8C)	(8D)	(8E)	(8F)	
	<i>Methyl trimethylol methane trinitrate</i>	Forbidden												
	alpha-Methyl valeraldehyde	3	UN2367	III FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3	1,3		
	Methyl vinyl ketone	3	UN1251	II FLAMMABLE LIQUID.	T8	150	202	242	5 L.....	60 L.....	1,3	1		
	<i>Nine rescue equipment containing carbon dioxide</i> , see Carbon dioxide.													
	Mines with bursting charge	1.1F	UN0136											
	Mines with bursting charge	1.1D	UN0137											
	Mines with bursting charge	1.2D	UN0138											
	Mines with bursting charge	1.2F	UN0294											
	<i>Mixed acid</i> , see Nitrating acid, mixtures													
	Molybdenum pentachloride	8	UN2508	III CORROSIVE.....	T8, T26	154	213	240	25 kg.....	100 kg.....	1	1	8, 40	
	<i>Monochloroacetone (unstabilized)</i>	Forbidden												
	Monochloroethylene, see Vinyl chloride.													
	Monoisopropanamine, see Ethanolamine													
	Monooxyethamine, see Ethylenamine													
	Morpholine	3	UN2054	III FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	220 L.....	1,3	1		
	Morpholine, aqueous mixture, see Carro- sive liquid, n.o.s.													
	Motorcycles, see Vehicles, self-propelled													
	Motor fuel antiknock mixtures	6.1	UN1649	I POISON, FLAMMABLE LIQUID.	B9, B11, B12, B43, T26, T39.	None	201	244	Forbidden....	30 L.....	1	1	5	
	<i>Motor spirit</i> , see Gasoline													
	<i>Motor vehicle</i> , see Vehicles, self-propelled													
	<i>Nutritive acid</i> , see Hydrochloric acid solu- tion.													
	<i>Musk xylene</i> , see 5-tert-Butyl2,4,6-trinitro- m-xylene.	3	UN2553	I FLAMMABLE LIQUID.	T8, T31	150	201	243	1 L.....	30 L.....	1,3	5		
	Naphthalene, crude or refined	4.1	UN1334	II FLAMMABLE LIQUID.	T8, T31	150	202	242	5 L.....	60 L.....	1,3	1		
	<i>Naphthalene dicarboxide</i>	Forbidden												
	Naphthalene, molten	4.1	UN2304	III FLAMMABLE SOLID.	B1, T7, T30	150	203	242	60 L.....	220 L.....	1,3	1,3		
	<i>Naphtha, petroleum</i>	3	UN1255	I FLAMMABLE LIQUID.	A1, T8, T38	151	213	241	25 kg.....	100 kg.....	1	1	5	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	(6) Packaging authorizations [§ 173.***]			(8) Quantity limitations			(10) Vessel stowage requirements		
							(6A)	(6B)	(6C)	(9A)	(9B)	(10A)	(10B)	(10C)	
(1)	Naphtha, solvent	3	UN1256	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....		
				III	FLAMMABLE LIQUID.	B1, T8.....	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....		
	alpha-Naphthyamine	6.1	UN2077	II	FLAMMABLE LIQUID.	T8, T31.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....		
				III	FLAMMABLE LIQUID.	B1, T7, T30, T7.....	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....		
	beta-Naphthyamine	6.1	UN1650	II	KEEP AWAY FROM FOOD.	T7.....	153	213	240	100 kg.....	200 kg.....	1,2.....	1,2.....	34.....	
				III	POISON	T12, T26.....	None	212	242	25 kg.....	100 kg.....	1,2.....	1,2.....	95.....	
	Naphthythiourea	6.1	UN1651	II	POISON	None	212	242	242	25 kg.....	100 kg.....	1,2.....	1,2.....	95.....	
				II	POISON	None	212	242	242	25 kg.....	100 kg.....	1,2.....	1,2.....	95.....	
	Naphthythiourea, Natural gases (with high methane content), see Methane, etc. (UN 1971, 1972).	3	UN1257	II	FLAMMABLE LIQUID.	T8.....	150	202	242	5 L.....	60 L.....	1,3.....	5.....	12.....	
	Naphthalene, see Hexanes	2.2	UN1085	II	NONFLAMMABLE GAS.	B13.....	306	302	244	75 kg.....	150 kg.....	1,3.....	1,3.....	85.....	
	Neon, compressed	2.2	UN1913	II	NONFLAMMABLE GAS.	B13.....	320	320	244	50 kg.....	500 kg.....	1,3.....	1.....	85.....	
	Neon, refrigerated liquid (cryogenic liquid)														
	New explosive or explosive device. See 173.51 and 173.36.														
	Nickel carbonyl	6.1	UN1258	I	POISON FLAMMABLE LIQUID.	None	198	None	None	Forbidden.....	Forbidden.....	1.....	5.....	18, 21, 40, 95	
	Nickel catalyst, dry	4.2	UN2881	I	SPONTANEOUSLY COMBUSTIBLE.	N15, N34 ..	None	211	None	Forbidden.....	Forbidden.....	1,3.....	1.....		
	Nickel catalyst, wetted with not less than 40 per cent water or other suitable liquid, by weight, finely divided, activated or spent.	4.2	UN1378	II	SPONTANEOUSLY COMBUSTIBLE.	A2, N2, N15, N34.	None	212	None	Forbidden.....	50 kg.....	1,3.....	1.....		
	Nickel cyanide	6.1	UN1653	II	POISON	N74, N75 ..	None	212	242	25 kg.....	100 kg.....	1,2.....	1,2.....	26, 95	
	Nickel nitrate	5.1	UN2255	III	OXIDIZER	A1	152	213	240	25 kg.....	100 kg.....	1,2.....	1,2.....	34, 56,	
	Nickel nitrite	5.1	UN2726	III	OXIDIZER	A1	152	213	240	25 kg.....	100 kg.....	1,2.....	1,2.....	58	
	Nickel picrate														
	Nicotine	6.1	UN1654	II	POISON	None	202	243	5 L.....	60 L.....	1,2.....	1,2.....	95.....		
				III	KEEP AWAY FROM FOOD.	None	203	241	60 L.....	220 L.....	1,2.....	1,2.....	34.....		
	Nicotine compounds, n.o.s. or Nicotine preparations, n.o.s. liquid.	6.1	UN1655	I	POISON	None	201	243	1 L.....	30 L.....	1,2.....	1,2.....	95.....		
				II	POISON	None	202	243	5 L.....	60 L.....	1,2.....	1,2.....	95.....		

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations § 1730.1*			Quantity limitations			Vessel stowage requirements		
							(6)	(7)	(8A)	(8B)	(8A)	(8B)	(10A)	(10B)	(10C)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(8A)	(8B)	(8C)	(8D)	(8E)	(10A)	(10B)	(10C)
Nicotine compounds, n.o.s. or Nicotine preparations, n.o.s. solid.	6.1 UN1655	.....	.....	III	KEEP AWAY FROM FOOD. I POISON.....	.....	153	203	241	60 L.....	220 L.....	1.2.....	1.2.....	34
Nicotine hydrochloride or Nicotine hydrochloride solution.	6.1 UN1656	.....	.....	II	POISON.....	.....	None	211	242	5 kg.....	50 kg.....	1.2.....	1.2.....	95
Nicotine salicylate	6.1 UN1657	.....	.....	III	KEEP AWAY FROM FOOD. II POISON.....	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	1.2.....	95
Nicotine sulfate, solid.....	6.1 UN1658	.....	.....	II	POISON.....	.....	153	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....	34
Nicotine sulfate, solution.....	6.1 UN1658	.....	.....	II	POISON.....	.....	None	202	243	5 L.....	60 L.....	1.2.....	1.2.....	95
Nicotine tartrate.....	6.1 UN1659	.....	.....	II	POISON.....	.....	None	212	242	25 kg.....	100 kg.....	1.2.....	1.2.....	95
Nitroated paper (unstable)	5.1 UN1477	Forbid-den	.....	II	OXIDIZER.....	B10.....	152	212	240	5 kg.....	25 kg.....	1.2.....	1.2.....	46
Nitrates, inorganic, n.o.s.	8 UN1826	.....	.....	I	CORROSIVE, OXIDIZER.	B28, T12, T27.	None	156	243	Forbidden	2.5 L.....	1.....	5.....	33, 40
Nitration acid mixtures, spent with more than 50 per cent nitric acid.	8 UN1826	.....	.....	II	CORROSIVE.....	B2, B28, T12,	None	158	242	Forbidden	30 L.....	1.....	5.....	33, 40
Nitration acid mixtures spent with not more than 50 per cent nitric acid.	8 UN1796	.....	.....	I	CORROSIVE, OXIDIZER.	B28, T12, T27.	None	156	243	Forbidden	2.5 L.....	1.....	5.....	33, 40
Nitration acid mixtures with more than 50 per cent nitric acid.	8 UN1796	.....	.....	II	CORROSIVE.....	B2, B28, T12,	None	158	242	Forbidden	30 L.....	1.....	5.....	33, 40
Nitration acid mixtures with not more than 50 per cent nitric acid.	8 UN2031	.....	.....	I	CORROSIVE.....	10, B12, B14, B32, B53.	None	158	244	Forbidden	Forbidden	1.....	5.....	33, 37, 38, 63
Nitric acid, other than red fuming, with more than 70 per cent nitric acid.	8 UN2031	.....	.....	II	CORROSIVE.....	B2, B12, B17, B28, T9, T27.	None	158	242	Forbidden	30 L.....	1.....	5.....	33, 37, 38, 63
Nitric acid, other than red fuming, with not more than 70 per cent nitric acid.	8 UN2032	.....	.....	I	CORROSIVE, OXIDIZER, POISON.	B17, B28, B30, 10.	None	158	244	Forbidden	Forbidden	1.....	5.....	33, 37, 38, 63
Nitric ether. See Ethyl nitrate.....	2.3 UN1660	.....	.....	I	POISON GAS.....	10, B7, B12, B14, B31, B37,	None	337	244	Forbidden	Forbidden	1.....	5.....	40, 95

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (§ 733...)		Quantity limitations		Vessel storage requirements (10)				
							(7)	(8A)	(8B)	(8C)	(8A)	(8B)			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	POISON GAS, OXIDIZER.	10, B7, B12, B14, B45, B46, A33.....	None	337	245	Forbidden....	1.....	5.....	40, 43, 95
	Nitric oxide and nitrogen tetroxide mixtures ..	2.3	UN1955	I	II	OXIDIZER	POISON, KEEP AWAY FROM FOOD.	T14..... T8.....	None	212	212	None	5 kg.....	1.2.....	34, 46, 58
	Nitrites, inorganic, n.o.s.	5.1	UN2627	II	III	OXIDIZER	POISON, KEEP AWAY FROM FOOD.	T14..... T8.....	None	153	242	25 kg.....	100 kg..... 220 L.....	1.2..... 1.3.....	95 12, 34
	N-Nitroaniline	6.1	UN1661	II	III	.....	.....	.....	None	203	241	60	100 kg..... 220 L.....	1.2..... 1.3.....	95 12, 34
	Nitroanilines (o-, m-, p-)	6.1	UN2730	III	III	.....	.....	.....	None	153	213	240	100 kg.....	200 kg.....	1.2.....
	Nitroanisole, solid	6.1	UN2730	II	II	.....	.....	.....	None	202	243	5 L.....	60 L.....	1.2.....	34
	Nitrobenzene, solid	6.1	UN1662	II	II	.....	.....	.....	None	202	243	5 L.....	60 L.....	1.2.....	40, 95
	m-Nitrobenzene diazonium perchlorate	8	UN2305	II	II	CORROSIVE .....	.....	.....	None	154	212	240	15 kg.....	50 kg.....	1.2.....
	Nitrobenzenesulfonic acid .....	.....	.....	.....	.....	.....	.....	.....	None	202	243	5 L.....	60 L..... 220 L.....	1.2..... 1.3.....	40, 95 12, 95
	Nitrobenzol, see Nitrobenzene .....	.....	.....	.....	.....	.....	.....	.....	None	153	241	60	60 L..... 220 L.....	1.2..... 1.3.....	40, 95 12, 95
	5-Nitrobenzotriazol	1.1D	UN0365	II	II	POISON	POISON, KEEP AWAY FROM FOOD.	T8..... T8, T38.....	None	202	243	5 L.....	60 L..... 220 L.....	1.2..... 1.3.....	40, 95 12, 95
	Nitrobenzotri fluorides	6.1	UN2306	II	II	.....	.....	.....	None	153	241	60	60 L..... 220 L.....	1.2..... 1.3.....	40, 95 12, 95
	Nitrobenzene, liquid	6.1	UN2732	III	III	.....	.....	.....	None	153	213	240	100 kg.....	200 kg.....	1.2.....
	Nitrobenzene, solid	6.1	UN2732	III	III	.....	.....	.....	None	153	213	240	100 kg.....	200 kg.....	1.2.....
	Nitrocellulose, dry or wetted with less than 25 per cent water (or alcohol), by weight.	1.1D	UN0340	II	II	.....	.....	.....	None	150	202	242	5 L.....	60 L.....	1.2.....
	Nitrocellulose, plasticized with not less than 18 per cent plasticizing substance, by weight.	1.3C	UN0343	II	II	.....	.....	.....	None	150	202	242	5 L.....	60 L.....	1.2.....
	Nitrocellulose, solution, flammable with not more than 12.6 per cent nitrogen, by weight, and not more than 55 per cent nitrocellulose, flash point less than 23 degrees C.	3	UN2059	II	II	FLAMMABLE LIQUID.	FLAMMABLE LIQUID.	A32, T9.....	None	150	202	242	5 L.....	60 L.....	1.2.....
	Nitrocellulose, solution, flammable with not more than 12.6 per cent nitrogen, by weight, and not more than 55 per cent nitrocellulose, flash point not less than 23 degrees C. but not more than 60.5 degrees C.	3	UN2060	II	II	FLAMMABLE LIQUID.	FLAMMABLE LIQUID.	A32, T9.....	None	150	202	242	5 L.....	60 L.....	1.2.....
	Nitrocellulose, unmodified or plasticized with less than 18 per cent plasticizing substance, by weight.	1.1D	UN0341	II	II	.....	.....	.....	None	151	212	None	1 kg.....	15 kg.....	1.....
	Nitrocellulose, wetted with not less than 25 per cent alcohol, by weight.	1.3C	UN0342	II	II	.....	.....	.....	None	151	212	None	1 kg.....	15 kg.....	1.....
	Nitrocellulose with alcohol, not less than 25 per cent alcohol by weight, and not more than 12.6 per cent nitrogen, by weight.	4.1	UN2566	II	II	FLAMMABLE SOLID.	FLAMMABLE SOLID.	.....	None	151	212	None	1 kg.....	15 kg.....	1.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (¹ & ²)		Quantity limitations (³)	Vessel storage requirements (¹⁰)	Other storage provisions (^{10C})
							(E.A)	(E.B)	(E.C)	(E.D)	(E.F)
4.1	Nitropipanes	3	UN2608	III	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	Cargo aircraft only
	p-Nitrosodimethylhydrazine	4.2	UN1369	II	SPONTANEOUSLY COMBUSTIBLE.	A19, A20, N34.	None	212	241	15 kg.....	Passenger aircraft or railcar
	Nitrostarch, dry or wetted with less than 20 per cent water, by weight.	1.1D	UN0146							220 L.....	Cargo vessel only
	Nitrostarch, wetted with not less than 20 per cent water, by weight.	4.1	UN1337	I	FLAMMABLE SOLID.	A19, A20, N2, N34, N41.	None	211	None	50 kg.....	Cargo vessel
	Nitrosugars (dry)	2.3	UN1069	II	POISON GAS, CORROSIVE.....	10.....	None	304	245	1 kg.....	Passenger vessel
	Nitrosyl chloride	8	UN2308	II	POISON GAS, CORROSIVE.....	B2, N1, N11, N26, N34, T9, T27.	154	202	242	1 L.....	Cargo vessel
	Nitrosulfuric acid									30 L.....	Cargo vessel
	Nitrotoluenes / liquid O ₂	6.1	UN1664	II	POISON.....	T14.....	None	202	243	5 L.....	Passenger vessel
	Nitrotoluenes, solid m- or p-	6.1	UN1664	II	POISON.....	T14.....	None	212	242	25 kg.....	Cargo vessel
	Nitrotoluidines (mono)	6.1	UN2650	III	KEEP AWAY FROM FOOD.	153.....	213	240	100 kg.....	Passenger vessel	
	Nitro urea	1.1.D	UN0147							100 kg.....	Cargo vessel
	Nitrous oxide and carbon dioxide mixtures, see Carbon dioxide and nitrous oxide mixtures.	2.3	UN1070	II	POISON GAS, OXIDIZER.	B19, B33, 10, B6, B14,	None	304	244	50 L.....	Passenger vessel
	Nitrous oxide, compressed.....	2.3	UN2201	II	POISON GAS, OXIDIZER.	B33, 10, T14.....	None	316	314	100 kg.....	Cargo vessel
	Nitrous oxide, refrigerated liquid.....	2.3	UN1665	II	POISON.....	T1.....	None	202	243	200 kg.....	Passenger vessel
	Nitroxylenes (<i>O</i> -, <i>m</i> -, <i>p</i> -)	6.1	UN1665	II			150	203	242	120 L.....	Cargo vessel
	Nitroxylens, see Nitroxylenes	3	UN1920	III	FLAMMABLE LIQUID.					220 L.....	Passenger vessel
	Nonflammable gas, n.o.s., see Compressed or Liquefied gases, etc. (UN 1955, 1956).										Passenger vessel
	Nonliquefied gases, see Compressed gases, etc.										Cargo vessel
	Nonliquefied hydrocarbon gas, see Hydrocarbon gases, compressed, n.o.s..										Passenger vessel
	Nonnitrichlorosilane	8	UN1799	II	CORROSIVE.....		None	202	242	30 L.....	Cargo vessel
	2.5 Nitromadiene	3	UN2251	II	FLAMMABLE LIQUID.		None	241	150	202	Passenger vessel
										50 L.....	Cargo vessel

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (§173...)		Quantity limitations (§)		Vessel stowage requirements (10)		
							Non-bulk packag- ing (§B)	Bulk packag- ing (§C)	Pas- enger aircraft or railcar (§A)	Cargo aircraft only (§B)	Cargo vessel (§B)	Pas- senger vessel (§A)	Other stowage provisions (10C)
(1)	<i>Nordhausen acid, see Sulfuric acid, fuming.</i> Octadecylchlorosilane.....	8	UN1600	II	CORROSIVE.....	B2, B6, N26, N34, T8, B1, T1.....	None	202	242	Forbidden	30 L.....	1	40
	Octadiene.....	3	UN2309	II	FLAMMABLE LIQUID.....	B1, T1.....	150	202	242	5 L.....	60 L.....	1,3	
				III	FLAMMABLE LIQUID.....	B1, T1.....	150	203	242	60 L.....	220 L.....	1,3	
	<i>1,7-Octatetra-3,5-diene-1,8-dimethoxy-9-octadecenoic acid.</i> Octafluorobut-2-ene.....	2.2	UN2422	.....	NONFLAMMA- BLE GAS.....	B13.....	None	304	244	75 kg.....	150 kg.....	1,3	85
	Octafluoroclobutane.....	2.2	UN1976	.....	NONFLAMMA- BLE GAS.....	B13.....	None	304	244	75 kg.....	150 kg.....	1,3	85
	Octafluoropropane.....	2.2	UN2424	.....	NONFLAMMA- BLE GAS.....	B13.....	None	304	244	75 kg.....	150 kg.....	1,3	85
	Octanes.....	3	UN1262	II	FLAMMABLE LIQUID.....	T1.....	150	202	242	5 L.....	60 L.....	1,3	
	n-Octanoyl peroxide, see Di-n-octanoyl peroxide, <i>technically pure</i>.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Octogen, see Cyclohexamethylene tetramine, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Octoate (Octol), dry or wetted with less than 15 per cent water by weight.	1.1D	UN0266	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Octyl aldehydes, flammable.....	3	UN1191	III	FLAMMABLE LIQUID.....	B1, T1.....	150	203	242	60 L.....	220 L.....	1,3	
	Octyl mercaptan.....	6.1	UN3023	I	POISON, FLAMMABLE LIQUID.....	B14, B32, 10.....	None	227	244	Forbidden	Forbidden	1,2	21, 40
	Ocytethylchlorosilane.....	8	UN1801	II	CORROSIVE.....	B2, B6, N26, N34, T8, T26, B13.....	None	202	242	Forbidden	30 L.....	1	40
	Oil gas.....	2.1	UN1071	.....	FLAMMABLE GAS.....	.....	None	304	244	Forbidden	150 kg.....	1	5
	<i>Oleum, see Sulfuric acid, fuming.</i>	.....	.....	.....	.....	.....	None	225	None	Forbidden .....	.....	1	5
	Organic peroxides, mixtures.....	5.2	UN2756	I	ORGANIC PEROXIDE.....	.....	None	225	None	Forbidden .....	.....	1	12, 40
	Organic peroxides, samples, n.o.s.	5.2	UN2255	I	ORGANIC PEROXIDE.....	.....	None	225	None	Forbidden .....	.....	1	12, 40
	Organic peroxides, trial quantities, n.o.s.	5.2	UN2899	I	ORGANIC PEROXIDE.....	.....	None	225	None	Forbidden .....	.....	1	12, 40
D	Organic phosphate, Organic phosphorus compound, or Organic phosphorus compound; mixed with compressed gas.	2.3	NA1955	I	POISON GAS.....	10.....	None	334	None	Forbidden .....	.....	1	5
	Organochlorine pesticides liquid, flammable, toxic, n.o.s., flash point less than 23 degrees C.	3	UN2762	I	FLAMMABLE LIQUID, POISON.	.....	None	201	243	Forbidden	30 L.....	1,3	5

Symbol (1)	Hazardous materials descriptions and proper shipping names (2)	Hazard class (3)	Identification numbers (4)	Pack- ing group (5)	Labels (6)	Special provisions (7)	Packaging Subordinations (8) (B13***1)		Quantity limitations (9)		Vessel stowage requirements (10)			
							Non- bulk pack- aging Exceptions (BA)	Bulk packag- ing (BC)	Passenger aircraft or traincar (BA)	Cargo aircraft only (BA)	Cargo vessel (98)	Pas- senger vessel (10A)	Cargo vessel (10B)	Other stowage provisions (10C)
	Organochlorine pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1	UN2995	I	FLAMMABLE LIQUID, POISON.		None	202	243	1 L.....	60 L.....	1.3.....	1.....	23, 40, 95
	Organochlorine pesticides, liquid, toxic, n.o.s.	6.1	UN2995	II	POISON, FLAMMABLE LIQUID.	T42.....	None	201	243	1 L.....	30 L.....	1.....	1.....	23, 40, 95
	Organophosphorus pesticides, liquid, toxic, n.o.s., flash point less than 23 degrees C.	6.1	UN3017	III	KEEP AWAY FROM FOOD.	T14.....	None	202	243	5 L.....	60 L.....	1.2.....	1.....	23, 34, 40
	Organophosphorus pesticides, solid toxic n.o.s.	6.1	UN2761	I	POISON.	B1, T14.....	153	203	242	60 L.....	220 L.....	1.2.....	1.....	23, 34, 40
	Organophosphorus pesticides, liquid, toxic, n.o.s., flash point less than 23 degrees C.	3	UN2784	II	FLAMMABLE LIQUID, POISON.	T14.....	None	202	242	5 L.....	60 L.....	1.2.....	1.....	23, 34, 40
	Organophosphorus pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1	UN3018	I	POISON, FLAMMABLE LIQUID.	N76, T14.....	None	201	243	1 L.....	60 L.....	1.3.....	1.....	23, 40, 95
	Organophosphorus pesticides, liquid, toxic, n.o.s.	6.1	UN2783	II	POISON.	B1, N76, T14.....	153	203	242	60 L.....	220 L.....	1.3.....	1.....	23, 34, 40
	Organophosphorus pesticides, solid, toxic, n.o.s.	6.1	UN2788	II	POISON.	N76, T14.....	None	202	243	5 L.....	60 L.....	1.2.....	1.....	23, 34, 40
	Organotin compounds, n.o.s., liquid					N77.....	None	212	242	50 kg.....	100 kg.....	1.2.....	1.....	40, 95
						N77.....	153	213	240	100 kg.....	200 kg.....	1.2.....	1.....	34, 40
						N1, N16, N33, N34,	None	201	243	1 L.....	30 L.....	1.2.....	1.....	40, 95
						N1, N16, N33, N34,	None	202	243	5 L.....	60 L.....	1.2.....	1.....	40, 95

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	(8) Packaging authorizations (§ 373, ...)		(9) Quantity limitations		(10) Vessel stowage requirements		
							Exception	Bulk packaging	Passenger aircraft or railcar	Cargo aircraft only	Cargo vessel	Pasenger vessel	Other stowage provisions
I				(5)	(6)	(7)	(8A)	(8B)	(8A)	(8B)	(10A)	(10B)	(10C)
	Organotin compounds, n.o.s. solid	6.1	UN2758	III	KEEP AWAY FROM FOOD. POISON.....	A2, A5, N1.	None	153 211	241 242 240	220 L..... 5 kg..... 100 kg..... 200 kg.....	1.2..... 1.2..... 1.2..... 1.2.....	1..... 1..... 1..... 1.....	34, 40 40, 95 40, 95 34, 40
	Organotin pesticides; liquid, 1 flammable, toxic, n.o.s., flash point less than 23deg C.	3	UN2757	III	KEEP AWAY FROM FOOD. FLAMMABLE LIQUID. POISON.....	A1, N1 A29	None	153 213	242 240	100 kg..... 200 kg.....	1.2..... 1.2.....	1..... 1.....	40, 95 40, 95 34, 40
	Organotin pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23deg C.	6.1	UN3019	II	FLAMMABLE LIQUID. POISON.....	FLAMMABLE LIQUID. POISON.....	None	202	243	30 L..... 1 L.....	1.3..... 1.3.....	1..... 1.....	5..... 23, 40, 95
	Organotin pesticides, liquid, toxic, n.o.s. or Hazardous substance, liquid, n.o.s. or Hazardous substance, solid, n.o.s., Osmium tetroxide	6.1	UN3020	II	FLAMMABLE LIQUID. POISON.....	FLAMMABLE LIQUID. POISON.....	None	201	243	30 L..... 1 L.....	1.2..... 1.2.....	1..... 1.....	23, 40, 95
	Organotin pesticides, solid, toxic, n.o.s.	6.1	UN2766	III	KEEP AWAY FROM FOOD. POISON.....	KEEP AWAY FROM FOOD. POISON.....	None	153 203	241 243	220 L..... 50 L..... 60 L.....	1.2..... 1.2..... 1.2.....	28, 34, 40 40, 95 40, 95	
	ORM-E, liquid or solid, n.o.s. See Hazardous substance, liquid, n.o.s. or Hazardous substance, solid, n.o.s., Orthonitroaniline, see Nitroanilines etc.	6.1	UN2471	I	POISON.....	N2, N39, N34.	None	211	242	30 L..... 60 L..... 220 L.....	1.2..... 1.2..... 1.2.....	1..... 1..... 1.....	40, 95
AD	Other regulated substances, n.o.s., liquid	9	None	III	CLASS 9	155	203	241	No limit.....	1.2.....	1.2.....	1.2.....	40, 95
AD	Other regulated substances, n.o.s., solid	9	None	III	CLASS 9	155	213	240	No limit.....	1.2.....	1.2.....	1.2.....	34
AD	Oxidizing substances, liquid, soluble	6.1	UN2449	III	KEEP AWAY FROM FOOD.	153	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....	
D	Oxidizing substances, liquid, corrosive, n.o.s.	5.1	NA9193	II	OXIDIZER.	B2.....	None	202	243	Forbidden.....	1 L.....	1.....	5.....
	Oxidizing substances, liquid, poisonous, n.o.s., Oxidizing substances, n.o.s. liquid	5.1	NA9199	II	OXIDIZER.	OXIDIZER.	None	201	243	Forbidden.....	1 L.....	1.....	5.....
	Oxidizing substances, n.o.s. solid	5.1	UN1479	I	OXIDIZER.	A2.....	152	202	242	5 L.....	1.2.....	1.2.....	40, 46, 56
	Oxidizing substances, n.o.s. solid	5.1	UN1479	II	OXIDIZER.	A2.....	152	203	240	60 L..... 25 kg.....	1.2..... 1.2.....	1.2..... 1.2.....	40, 46, 56

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Pack- ing group	Labels	Special provisions	(8) Packaging authorizations (§173...)		Quantity limitations		Vessel stowage requirements (11)			
							(6A)	(6B)	(6C)	(6D)	(6E)	(6F)		
(1)	Oxidizing substances, solid, corrosive, n.o.s.	(3)	(4)	(5)	(6)	(7)	B10..... II OXIDIZER, CORROSIVE. B10..... III OXIDIZER, CORROSIVE. B10..... I OXIDIZER, POISON, OXIDIZER, POISON.	None None None None None	211 212 213 211 212 213	242 240 240 242 240 240	1 kg..... 25 kg..... 100 kg..... 1 kg..... 5 kg..... 25 kg.....	15 kg..... 25 kg..... 100 kg..... 15 kg..... 25 kg..... 100 kg.....	(10A)	(10B)
	Oxidizing substances, solid, poisonous, n.o.s.	5.1	UN3087				B10..... II OXIDIZER, POISON.	None	211 212 213	242 240 240	1 kg..... 5 kg..... 25 kg.....	1.2..... 1.2..... 1.2.....	4..... 4..... 4.....	
	Oxygen and carbon dioxide mixtures, see Carbon dioxide and oxygen mixtures.						III OXIDIZER KEEP AWAY FROM FOOD.	None	152	240	25 kg.....	100 kg.....	12.....	
	Oxygen difluoride, see Oxygen, mixtures with rare gases, see Rare gases and oxygen mixtures.								306	302	314, 315	150 kg.....	13.....	
	Oxygen, refrigerated liquid (cryogenic liquid).	2.3	UN2190	I	POISON GAS	10.....	None	304	245	Forbidden	1	5.....		
	Paint or Paint related material	2.2	UN1073				NONFLAMMA- BLE GAS, OXIDIZER.	320	316	318	Forbidden	1	13, 40	
	Paint or Paint related material	3	UN1263	I			NONFLAMMA- BLE GAS, OXIDIZER.	150	201	243	1 L..... 5 L.....	1.3..... 5.....	5	
	Paraldehyde						II FLAMMABLE LIQUID.	150	173	242	30 L..... 60 L.....	1.3..... 1.2.....	1	
	Paraldehyde						III FLAMMABLE LIQUID.	150	173	241	60 L..... 220 L.....	1.3..... 5.....	5	
D	Paranitroaniline, solid, see Nitroanilines etc.	4.1	UN2213	III	FLAMMABLE SOLID.	A1.....	151	213	240	25 kg..... 60 L.....	100 kg..... 220 L.....	1.3..... 1	1	
D	Parathion	3	UN1264	III	FLAMMABLE LIQUID.	T1.....	150	203	242	60 L.....	1 L..... 5 L.....	1.3..... 1.3.....	5	
D	Parathion and compressed gas mixture	6.1	NA2783	I	POISON		None	201	243	Forbidden	1 L..... 243	1.3..... 1.3.....	40, 95	
D	Parathion and compressed gas mixture	2.3	NA1967	II	POISON GAS	10,	None	202	244	Forbidden	5 L..... None	1.3..... 1.3.....	5	

Symbols	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(6) Packaging authorizations		(9) Quantity limitations		Vessel storage requirements		
							(7)	(8A)	(8C)	(8E)	Cargo aircraft only	Cargo vessel	Pasenger vessel	Other storage provisions
(1)	<i>Paris green, soft, see Copper acetoarsenite.</i> PCB. See Polychlorinated biphenyls.....	(2)	(3)	(4)	(5)	(6)							
D	Pentagonal peroxide, see Di-n-nonanoyl peroxide, technically pure.												
	Pentaborane.....												
4.2	UN1380												
	Pentachloroethane.....												
6.1	UN1668	II			SPONTANEOUSLY COMBUSTIBLE POISON.....	10	None	205	246	Forbidden.....	1	5	
	Pentaerythrite tetranitrate (dry).....												
	Pentaerythrite tetranitrate (PENTN) wetted with no less than 25 per cent water by weight, or Pentaerythrite tetranitrate (Pentaerythritol tetranitrate; PETN) desensitized with not less than 15 per cent phenolizer by weight.												
	Pentaerythrite tetranitrate (PETN) with not less than 7 per cent wax by weight.												
	Pentaerythritol tetranitrate, see Pentaerythrite tetranitrate, etc.												
	Pentamethylheptane.....												
3	UN2286	III	FLAMMABLE LIQUID.	B1, T1		150	203	242	60 L.....		220 L.....	1,3	1,3
3	UN2310	III	FLAMMABLE LIQUID.	B1, T1		150	203	242	60 L.....		220 L.....	1,3	1,3
	Pentan-2,4-dione.....												
3	UN1265	I	FLAMMABLE LIQUID.	T20		150	201	243	1 L.....		30 L.....	1,3	5
	n-Pentane or Isopentane.....												
	Pentaurotoxin (dry).....												
1-Pentol.....	Forbidden.....												
8	UN2705	II	CORROSIVE.....	B2, T8		154	202	242	1 L.....		30 L.....	1,2	1
1.1D	UN0151	II											
	Pentolite, dry or wetted with less than 15 per cent water by weight.												
5.1	UN1481	II	OXIDIZER.....	B10		152	212	240	5 kg.....		25 kg.....	1,2	46, 56
5.1	UN1873	I	OXIDIZER, CORROSIVE.	A2, N1, N34, N41, T9, T27.		None	201	249	Forbidden.....	2.5 L.....		1	5
	Perchloric acid more than 50 per cent but not more than 72 per cent acid, by weight.												
	Perchloric acid, more than 72 per cent acid by weight.												
	Perchloric acid not more than 50 per cent acid by weight.												
	Perchloroethylene, see Tetrahydroethylene.												
8	UN1802	II	CORROSIVE, OXIDIZER.	N15, N34, N41, T9.		None	202	243	Forbidden.....	30 L.....	1	1	37

(1)	Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identificat- ion numbers	Pack- ing group	Labels	Special provisions	(8) Authorizations [§ 172.21***]		Quantity limitations (9)	Vessel stowage requirements (10)	
								(5)	(6)			
6.1	UN1670	I POISON	6.1	B14, B25, B32, N1, N15, N17, N26, N34, 10, 10, B12, B14, B33.	None	227	244	Forbidden	Forbidden	1	5.....	40, 95
2.3	UN3083	II POISON GAS, OXIDIZER.	2.3	N10,	None	302	244	Forbidden	Forbidden	1	5.....	40, 43, 95
Percloid fluoride.....												
Percussion caps, see Primers, cap type												
Perfluoro-2-butene, see Octafluorobut-2-ene.												
Perfumery products with flammable solvents.	3	UN1266	II FLAMMABLE LIQUID, III FLAMMABLE LIQUID.	T7, T30..... B1, T7, T30.	150	202	242	15 L..... 60 L..... 242	15 L..... 60 L..... 220 L.....	13..... 13..... 13.....	1..... 1..... 1.....	
Permanganates, inorganic, n.o.s.	5.1	UN1482	II OXIDIZER	A30, B10,..... A20, B10,.....	152	212	240	5 kg..... 5 kg..... 240	25 kg..... 25 kg..... 12.....	12..... 12..... 12.....	56, 69	
Peroxides, inorganic, n.o.s.	5.1	UN1483	II OXIDIZER	N26, N34.	None	212	240	5 kg..... 5 kg..... 240	25 kg..... 25 kg..... 12.....	12..... 12..... 12.....	13, 46	
Peroxacetic acid, more than 43 per cent and with more than 6 per cent hydrogen peroxide.	5.2	UN3045	Forbid- den	I ORGANIC PEROXIDE, CORROSIVE.	None	225	None	1 L..... 5 L.....	5 L..... 1.....	5..... 1.....	12, 40	
Peroxacetic acid, not more than 16 per cent in a mixture with at least 39 per cent water, at least 15 per cent acetic acid, not more than 24 per cent hydrogen peroxide, with stabilizer.	5.2	UN2131	I ORGANIC PEROXIDE.	None	225	None	None	1 L..... 5 L.....	1 L..... 1.....	1..... 1.....	12, 40	
Peroxacetic acid, not more than 43 percent in a mixture with at least 5 percent water, at least 35 percent acetic acid, not more than 6 percent hydrogen peroxide with stabilizer.	5.2	UN3021	I FLAMMABLE LIQUID, POISON, FLAMMABLE LIQUID, POISON.	B5..... T42.....	None	201	243	30 L..... 1 L.....	30 L..... 1 L.....	1, 3..... 1, 3.....	5..... 1.....	
Pesticides, liquid, toxic, flammable, n.o.s., flash point less than 23 degrees C.	6.1	UN2903	I POISON, FLAMMABLE LIQUID, POISON, FLAMMABLE LIQUID, KEEP AWAY FROM FOOD.	T14..... T14..... T14.....	None	202	243	1 L..... 1 L..... 1 L.....	60 L..... 30 L..... 60 L.....	1, 3..... 1..... 1, 2.....	1..... 1..... 1.....	23, 40, 95
Pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1	UN2902	I POISON	T42.....	None	201	243	1 L..... 1 L.....	220 L..... 30 L.....	1, 2..... 1.....	1..... 1.....	23, 40, 95

Symbol	Hazardous materials descriptions and proper shipping names	Identification numbers	Packaging group	Labels	Special provisions	Packaging authorizations (§ 173,***)	Quantity limitations (§ 10)		Vessel stowage requirements (§ 10)	
							Exceptions (§ 104)	Bulk packaging (§ 105)	Passenger aircraft or railcar (§ 104)	Passenger vessel (§ 104)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10A)	(10B)
	Phenoxy pesticides, liquid, flammable, toxic n.o.s., flash point less than 23 degrees C.	3 UN2786	I FLAMMABLE LIQUID, POISON.		None	201	243	1 L.....	1,3.....	5.....
	Phenoxy pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1 UN2999	II FLAMMABLE LIQUID, POISON.	T42.....	None	202	243	1 L.....	60 L.....	13.....
	Phenoxy pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1 UN3000	I POISON, FLAMMABLE LIQUID.	T14.....	None	201	243	1 L.....	30 L.....	1.....
	Phenoxy pesticides, liquid, toxic, n.o.s.	6.1 UN3000	II FLAMMABLE LIQUID.	T14.....	None	202	243	5 L.....	30 L.....	1.....
	Phenoxy pesticides, solid, toxic, n.o.s.	6.1 UN2765	III KEEP AWAY FROM FOOD.	T14.....	None	203	242	60 L.....	60 L.....	1,2.....
	Phenylacetonitrile, liquid	6.1 UN2470	I POISON.	T8.....	None	211	242	5 kg.....	50 kg.....	12.....
	Phenylacetyl chloride	8 UN2577	II CORROSIVE.	B2, T8, T26.	None	212	242	25 kg.....	100 kg.....	12.....
	Phenylcarbamine chloride	6.1 UN1672	I POISON.	B14, B32.	None	213	240	100 kg.....	200 kg.....	12.....
	Phenylchloroformate	6.1 UN2746	II POISON, CORROSIVE.	T12.....	None	202	243	1 L.....	220 L.....	12.....
D	Phenyldichloroarsine	6.1 NA1556	I POISON.	B3, B14, B30, 10.	None	226	244	Forbidden....	Forbidden....	1.....
	m-Phenylenediamine/diphenylborate (dry)	6.1 UN1673	III KEEP AWAY FROM FOOD.		None	213	240	100 kg.....	200 kg.....	1,2.....
	Phenylenediamines (α , β , m , p -)	6.1 UN2572	II POISON.	10, B14, B30,	None	202	243	5 L.....	60 L.....	12.....
	Phenylhydrazine	6.1 UN2487	I POISON.	N1, N3, N34,	None	227	244	Forbidden....	Forbidden....	1.....
	Phenylmercaptan	6.1 UN2337	I POISON, FLAMMABLE LIQUID.	10, B14, B32.	None	227	244	Forbidden....	Forbidden....	1.....
	Phenylmercuric acetate	6.1 UN1674	II POISON.		None	212	242	25 kg.....	100 kg.....	1,2.....
	Phenylmercuric compounds, n.c.s.	6.1 UN2026	II POISON.		None	211	242	5 kg.....	50 kg.....	12.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	Packaging authorizations (§173...)		Quantity limitations (§)		Vessel stowage requirements (10)			
							Except- ions (BA)	Bulk packag- ing (BC)	Passenger aircraft or motor- car (BB)	Cargo aircraft only (B)	Cargo vessel only (BB)	Other stowage provisions (10C)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	II	KEEP AWAY FROM FOOD.	153	213	240	200 kg..... 100 kg..... 100 kg..... 30 L.....	1.2..... 1.2..... 1.2..... 1.2.....	34 95 95 40
	Phenylmercuric hydroxide.....	6.1	UN1894	II	POISON.	None	212	242	25 kg..... 25 kg..... Forbiden...	100 kg..... 100 kg..... 30 L.....	1.2..... 1.2..... 1.2.....	95 95 40		
	Phenylmercuric nitrate.....	6.1	UN1895	II	POISON.	None	212	242	25 kg..... Forbiden...	100 kg..... 30 L.....	1.2..... 1.2.....	95 40		
	Phenyl phosphorus dichloride.....	8	UN2798	II	CORROSIVE.....	B2, B15, T8, T26,	154	202	242	Forbiden...	30 L.....	1.2.....	40	
	Phenyl phosphorus thioldichloride.....	8	UN2799	II	CORROSIVE.....	B2, B15, T8, T26,	154	202	242	Forbiden...	30 L.....	1.2.....	40	
	Phenyltrichlorosilane.....	8	UN1804	I	CORROSIVE, POISON.	B6, B14, B92, N26, N34, 10,	None	227	244	Forbiden...	Forbiden...	1.....	1.....	
	Phenyl urea pesticides, liquid, flammable, toxic, n.o.s., flash point less than 23 degrees C.	3	UN2768	I	FLAMMABLE LIQUID, POISON.	None	201	243	Forbiden...	30 L.....	1.3.....	5.....		
				II	FLAMMABLE LIQUID, POISON.	None	202	243	1 L.....	60 L.....	1.3.....	1.....		
	Phenyl urea pesticides, liquid, toxic, flam- mable, n.o.s., flash point not less than 23 degrees C.	6.1	UN3001	I	POISON, FLAMMABLE LIQUID.	T42.....	None	201	243	1 L.....	30 L.....	1.....	23, 40, 95	
				II	POISON, FLAMMABLE LIQUID.	T14.....	None	202	243	5 L.....	60 L.....	1.2.....	1.....	
				III	KEEP AWAY FROM FOOD.	B1, T14.....	153	203	242	60 L.....	220 L.....	1.2.....	1.2.....	
	Phenyl urea pesticides, liquid, toxic, n.o.s.....	6.1	UN3002	I	POISON.	T42.....	None	201	243	1 L.....	30 L.....	1.....	23, 40, 95	
				II	POISON.	T14.....	None	202	243	5 L.....	60 L.....	1.2.....	1.....	
				III	KEEP AWAY FROM FOOD.	T14.....	153	203	241	60 L.....	220 L.....	1.2.....	34, 40	
	Phenyl urea pesticides, solid, toxic, n.o.s.....	6.1	UN2767	I	POISON.	None	211	242	5 kg.....	50 kg.....	12.....	40, 95		
				II	POISON.	None	212	242	25 kg.....	100 kg.....	12.....	40, 95		
				III	KEEP AWAY FROM FOOD.	153	213	240	100 kg.....	200 kg.....	12.....	34, 40		
	Phosgene.....	2.3	UN1076	I	POISON GAS, CORROSIVE.	10, B7, B45, A19.....	None	192	245	Forbiden...	Forbiden...	1.....	5.....	
	9-Phosphabicyclononanes (Cyclo-octa- diene phosphines),	4.2	UN2940	II	SPONTANE- OUSLY COMBUSTI- BLE.	None	212	241	15 kg.....	50 kg.....	1.3.....	1.3.....		
	Phosphine.....	2.3	UN2193	I	POISON GAS, FLAMMABLE GAS.	B7, 10.....	None	192	245	Forbiden...	1.....	5.....	40, 95	
	Phosphoric acid.....	8	UN1805	II	CORROSIVE.	N26, N34, 77.	154	203	241	5 L.....	60 L.....	1.2.....	1.2.....	

*Phosphoric acid triethylbenzeneimine, see Tri-
(1-azinyl) phosphine oxide, solution.*

Syn- Ns	Hazardous materials descriptions and proper shipping names	Hazard class	Identifi- cation numbers	Pack- ing group	Labels	Special provisions	(6) Packaging (if applicable)		(7) Quantity limitations		(10) Vessel stowage requirements		
							(4)	(5)	(6)	(7)	(8A)	(8B)	
(1)	<i>Phosphoric anhydride, see Phosphorus pentoxide.</i> <i>Phosphorous acid, ortho.</i> <i>Phosphorus, amorphous.</i>	8 4.1	UN2834 UN1338	I II	CORROSIVE..... FLAMMABLE SOLID.		154 213	240 243	25 kg..... 25 kg.....	100 kg..... 100 kg.....	13..... 13.....	1.3..... 1.3.....	
	<i>Phosphorus bromide, see Phosphorus tribromide.</i> <i>Phosphorus chloride, see Phosphorus trichloride.</i> <i>Phosphorus heptasulfide, free from yellow and white phosphorus.</i> <i>Phosphorus oxybromide.</i>	4.1 6 8	UN1339 UN1939 UN2576	II II II	FLAMMABLE SOLID. CORROSIVE.....	A20, B10, N34. B8, B10, N15, N34, N41. B2, B8, N15, N34, N41, T8, T27, T38.	None None None	212 212 202	240 240 242	15 kg..... 50 kg..... 50 kg.....	50 kg..... 50 kg..... 50 kg.....	1.3..... 1.3..... 1.3.....	74 12, 40 40
	<i>Phosphorus oxybromide, molten.</i>	8	UN1810	I	CORROSIVE, POISON.	10, B8, B14, B32, N26, N34.	None	227	244	Forbidden....	Forbidden....	1..... 1.....	8, 40
	<i>Phosphorus oxychloride.</i>	8	UN2691	II	CORROSIVE.....	B10, N26, N34, N34.	154	202	240	Forbidden....	50 kg.....	1.3..... 1.....	12, 40
	<i>Phosphorus pentabromide.</i>	8	UN1806	II	CORROSIVE.....	B10, N26, N34.	None	202	240	Forbidden....	50 kg.....	1..... 1.....	40
	<i>Phosphorus pentachloride.</i>	2.3 4.3	UN2198 UN1340	I II	Poison GAS..... DANGEROUS WHEN WET, FLAMMABLE SOLID.	B13, 10..... A20, B10, N34.	302 None	245 241	50 kg..... 50 kg.....	Forbidden....	1..... 1.3.....	5..... 1.3.....	40, 95 74
	<i>Phosphorus pentoxides.</i>	8	UN1807	II	CORROSIVE.....	B10, N26, N34.	154	212	240	15 kg.....	50 kg.....	1.2..... 1.2.....	9
	<i>Phosphorus sesquisulfide, free from yellow and white phosphorus.</i> <i>Phosphorus tribromide.</i>	4.1 8	UN1341 UN1808	II II	FLAMMABLE SOLID. CORROSIVE.....	A20, B10, N34, B2, B25, N1, N11, N26, N34, T8.	None None	212 202	240 242	15 kg..... 30 L.....	50 kg..... 30 L.....	1..... 1.....	74 8, 40

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packing authorizations (§3173)	Quantity limitations	(9) Vessel stowage requirements		
									(4)	(5)	(6)
(1)	Phosphorus trichloride.....	8	UN1809	I CORROSIVE, POISON.	10, BB, B14, B32, N1, N26, N34,	None	227	244	Forbidden....	1.....	1.....
	Phosphorus trioxide.....	8	UN2578	III CORROSIVE, FLAMMABLE	A20, B10, N34,	None	154	241	25 kg..... 50 kg.....	1,3..... 1,3.....	12..... 12.....
	Phosphorus trisulfide, free from yellow and white phosphorus.	4.1	UN1343	II SOLID.	A19, B12, B26, N1, N15, N34,	None	188	243	Forbidden....	1,3.....	5.....
	Phosphorus, white or yellow dry or under water or in solution.	4.2	UN1381	I SPONTANE- OUSLY COMBUSTI- BLE, POISON.	T15, T26, T28,	None	188	243	Forbidden....	1.....	5.....
	Phosphorus white, mollen.....	4.2	UN2447	I SPONTANE- OUSLY COMBUSTI- BLE, POISON.	A19, B12, B26, N1, N15, N34, T15, T26, T29,	None	188	243	Forbidden....	1.....	5.....
	Phosphorus (white or red) and a chlorate, mixtures of.			Forbidden.....							
	Phosphonyl chloride, see Phosphorus oxychloride.										
	Photo-flash powder, in units.....	1.1G	UN0094	III CORROSIVE,	T7, T38.....	None	154	240	25 kg..... 30 L.....	1,2..... 1,3.....	34.....
	Photo-flash powder, in units.....	1.2G	UN0095	I FLAMMABLE	T42.....	None	201	243	Forbidden....	5.....	
	Photo-flash powder, in units.....	1.3G	UN0305	I FLAMMABLE LIQUID,		None	202	243	1 L.....	1,3.....	
	Phthalic anhydride.....	8	UN2214	I FLAMMABLE LIQUID, POISON.		None	202	243	1 L.....	1.....	
	Phthalimide derivative pesticides, liquid, flammable, toxic, n.o.s., flash point less than 23 degrees C.	3	UN2774	I FLAMMABLE LIQUID, POISON.	T14.....	None	201	243	30 L.....	1.....	
	Phthalimide derivative pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1	UN3007	I POISON, FLAMMABLE LIQUID.	T14.....	None	202	243	5 L.....	1,2....	1.....
	Phthalimide derivative pesticides, liquid, toxic, n.o.s.	6.1	UN3008	II KEEP AWAY FROM FOOD, POISON.	T14.....	None	153	203	60 L.....	220 L.....	23, 40, 95
	Phthalimide derivative pesticides, liquid, toxic, n.o.s.	ii		ii POISON.....	T42.....	None	201	243	1 L.....	30 L.....	23, 40, 95
					T14.....	None	202	243	5 L.....	60 L.....	40, 95
									1,2....	1.....	40, 95

(1)	Sym- bols	Hazardous materials descriptions and proper shipping names	Hazard class	Identifi- cation numbers	Pack- ing group	Labels	Special provisions	Packaging authorizations (§ 731***)			Quantity limitations			Vessel stowage requirements (10)
								(6A)	(6B)	(6C)	(6D)	(6E)	(6F)	
D		Phthalimide derivative pesticides, solid, toxic, n.o.s.	6.1	UN2773	III I	KEEP AWAY FROM FOOD. POISON.	T14.....	153	203	241	60 L.....	220 L.....	1.2.....	34, 40
		Picolinines	3	UN2313	II II	KEEP AWAY FROM FOOD. FLAMMABLE LIQUID.	TB.....	153 150	213 202	242	5 L.....	200 kg..... 60 L.....	1.2..... 1.2.....	40, 95
		Picric acid, see Trinitrophenol, etc.	4.1	NA1344	I	FLAMMABLE SOLID.	A19, A20, N34(N41.	None	211	None	Forbidden....	1.....	1.....	34, 40
		Picrite, see Nitroguanidine, etc.												40, 95
		Picyr chloride, see Trinitrochlorobenzene												40, 95
		Pinane hydroperoxides, see Pinanyl hydroperoxide technically pure.												40, 95
		Pinanyl hydroperoxide or Pinane hydroperoxide, technically pure.												40, 95
		Pindona liquid												40, 95
		Pindona solid												40, 95
		alpha-Pinene	3	UN2368	III III	KEEP AWAY FROM FOOD. FLAMMABLE LIQUID.	T1.....	150	203	242	60 L.....	200 kg..... 220 L.....	1.2..... 1.2.....	34, 34
		Pine oil	3	UN1272	III III	KEEP AWAY FROM FOOD. FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	200 kg..... 220 L.....	1.2..... 1.2.....	34, 34
		Piperazine	8	UN2579	III II	CORROSIVE..... FLAMMABLE LIQUID.	T7..... T2.....	154 150	213 202	240 242	25 kg..... 60 L.....	100 kg..... 60 L.....	1.3..... 1.3.....	34, 34
		Piperidine	3	UN2401	II									34, 34
		Pivaloyl chloride, see Trimethyl acetyl chlo-												34, 34
		Plastic moulding material in dough, sheet or extruded rope form.	9		II	CLASS 9.....		155	213	None	100 kg.....	200 kg.....	1.2.....	34, 34
		Plastics, nitrocellulose based, spontaneously combustible, n.o.s..	4.2	UN2006	III	SPONTANE- OUSLY COMBUSTI- BLE.		None	213	None	Forbidden....	1.....	1.....	34, 34
		Plastic solvent, n.o.s., see Flammable liquids, n.o.s..												34, 34
		Porous gases, n.o.s., see Compressed or liquefied gases, flammable or toxic, n.o.s..												34, 34
		Poisonous liquids, corrosive, n.o.s., spontaneous combustion, n.o.s..												34, 34
		Poisonous liquids, corrosive, n.o.s., inhalation hazard, Packing Group I, Zone A.												34, 34
		6.1	UN2927	I	POISON, CORROSIVE.		None	201	243	0.5 L.....	2.5 L.....	1.2.....	1.....	20, 40,
				II	POISON, CORROSIVE.		None	202	243	1 L.....	30 L.....	1.2.....	1.....	20, 40,
		6.1	UN2927	I	POISON, CORROSIVE.		None	226	245	Forbidden....	1.....	1.....	1.....	20, 40,

Syn- tions	Hazardous materials descriptions and proper shipping names		Hazard class	Identifica- tion numbers	Pack- ing group	Labels	Special provisions	Packaging authorizations (§ 173.107)		Quantity limitations (§ 10)		Vessel storage requirements (§ 10)			
	(2)	(3)						(4)	(5)	(6)	(7)	(8A)	(8B)	(8C)	
{1}	Poisonous liquids, corrosive, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, flammable, n.o.s.....	6.1	UN2227	I POISON, CORROSIVE.	10, B14, B32, B38, B40, T42.	None	227	244	Forbidden	Cargo aircraft only	1	5	20, 40, 95	Other storage provisions	
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2229	I POISON, FLAMMABLE LIQUID.	10, B14, B32, B38, B40, T42.	None	201	243	1 L.....	30 L.....	1,2.....	1	21, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2229	II POISON, FLAMMABLE LIQUID.	10, B14, B32, B38, B40, T42.	None	202	243	5 L.....	60 L.....	1,2.....	1	21, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2229	I POISON, FLAMMABLE LIQUID.	10, B14, B32, B38, B40, T42.	None	226	245	Forbidden	Cargo aircraft only	1	5	20, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2229	I POISON, FLAMMABLE LIQUID.	10, B14, B32, B38, B40, T42.	None	227	244	Forbidden	Cargo aircraft only	1	5	20, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2229	I POISON, FLAMMABLE LIQUID.	10, B14, B32, B38, B40, T42.	None	201	243	1 L.....	30 L.....	1,2.....	1	40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2229	II POISON, FLAMMABLE LIQUID.	10, B14, B32, B38, B40, T42.	None	202	243	5 L.....	60 L.....	1,2.....	1	40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2229	I POISON, FLAMMABLE LIQUID.	10, B14, B32, B38, B40, T42.	None	158	203	241	60 L.....	220 L.....	1,2.....	1	34, 40	
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2210	II KEEP AWAY FROM FOOD, POISON.	10, B14, B30.	None	226	245	Forbidden	Cargo aircraft only	1	5	20, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2210	I POISON.	10, B14, B32.	None	227	244	Forbidden	Cargo aircraft only	1	5	20, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2228	I POISON, CORROSIVE.	10, B14, B32.	None	211	242	1 kg.....	25 kg.....	1,2.....	1	20, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2228	II POISON, CORROSIVE.	10, B14, B32.	None	212	242	15 kg.....	50 kg.....	1,2.....	1	20, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2230	I POISON, FLAMMABLE SOLID.	10, B14, B32.	None	211	242	1 kg.....	15 kg.....	1,2.....	1	24, 40, 95		
	Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone A. Poisonous liquids, flammable, n.o.s., <i>inhalation hazard</i> , Packing Group I, Zone B. Poisonous liquids, n.o.s.....	6.1	UN2230	II POISON, FLAMMABLE SOLID.	10, B14, B32.	None	212	242	15 kg.....	50 kg.....	1,2.....	1	24, 40, 95		
	Poisonous solids, oxidizing, n.o.s.....	6.1	UN2811	I POISON, OXIDIZER.	10, B14, B32.	None	211	242	5 kg.....	50 kg.....	1,2.....	1	95		
	Poisonous solids, oxidizing, n.o.s.....	6.1	UN3086	II POISON, OXIDIZER.	10, B14, B32.	None	212	242	15 kg.....	50 kg.....	1,2.....	1	40, 89, 95		
	Polyalkylamines, n.o.s., <i>see</i> Alkylamines, etc.	9	UN2215	CLASS 9	10, B14,	None	155	240	100 L.....	220 L.....	1,2.....	1	34		
	Polychlorinated biphenyls.....	5.2	NA2255	II ORGANIC PEROXIDE.	10, B14,	None	225	246	5 kg.....	5 kg.....	1,2.....	1	5		
	Polystryrene beads, expandable, <i>eroving</i> flammable vapor..	9	UN2211	III CLASS 9	10, B14,	221	240	100 kg.....	200 kg.....	1,2.....	1	1,2.....	84		

AW
D
Polystryrene beads, expandable, *eroving*
flammable vapor..

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(8) Packaging authorizations (if applicable)		(9) Quantity limitations		Passenger aircraft only	Cargo vessel	Passenger vessel	Other storage provisions	Vessel stowage requirements (10)	
							(5)	(6)	(7)	(8A)	(8B)					
(1)	Powder, smokeless. Power device, explosive, see Cartridges, power device.	1.3C	UN0161													
	Primers, cap type	1.4S	UN0044													
	Primers, cap type	1.1B	UN0377													
	Primers, cap type	1.4B	UN0378													
	Primers, small arms, see Primers, cap type.															
	Primers, tubular	1.3G	UN0318													
	Primers, tubular	1.4G	UN0320													
	Primers, tubular	1.4S	UN0376													
	Projectiles, illuminating, see Ammunition, il- luminating, etc.															
	Projectiles, inert with tracer	1.4F	UN0345													
	Projectiles, inert, with tracer	1.3G	UN0424													
	Projectiles, with burster or expelling charge	1.4G	UN0425													
	Projectiles, with burster or expelling charge	1.2D	UN0346													
	Projectiles, with burster or expelling charge	1.4D	UN0347													
	Projectiles, with burster or expelling charge	1.2F	UN0426													
	Projectiles, with burster or expelling charge	1.4F	UN0427													
	Projectiles, with burster or expelling charge	1.2G	UN0434													
	Projectiles, with burster or expelling charge	1.4G	UN0435													
	Projectiles, with burster or expelling charge	1.1F	UN0167													
	Projectiles, with burster or expelling charge	1.1D	UN0168													
	Projectiles, with bursting charge	1.2D	UN0169													
	Projectiles, with bursting charge	1.2F	UN0324													
	Projectiles, with bursting charge	1.4D	UN0344													
	Propadiene, inhibited	2.1	UN2200													
	Propadiene mixed with methyl acetylene, see Methyl acetylene and propadiene mixtures, stabilized.															
	Propane see also Petroleum gases, liqui- fied.	2.1	UN1978													
	Propanethiols	3	UN2402	II	FLAMMABLE GAS. FLAMMABLE LIQUID.	T8.....	150	202	304	314	315	242	5 L.....	150 kg.....	1.3.....	
	n-Propanol	3	UN1274	II	FLAMMABLE LIQUID.	B1, T1.....	150	202	242	242	243	5 L.....	60 L.....	1.3.....	40 L.....	
D	Propargyl alcohol	3	NA1986	II	FLAMMABLE LIQUID.	POISON.	None	202	154	241	241	5 L.....	60 L.....	1.3.....	12.....	
	Propionaldehydes	3	UN1275	II	FLAMMABLE LIQUID.	POISON.	T14.....	150	202	242	242	5 L.....	60 L.....	1.3.....	34, 35, 40.....	
	Propionic acid	8	UN1848	II	FLAMMABLE LIQUID.	CORROSIVE.	T7.....	154	203	241	241	5 L.....	60 L.....	1.3.....	12.....	
	Propionic anhydride	8	UN2496	III	FLAMMABLE LIQUID.	CORROSIVE.	T2.....	154	203	241	241	5 L.....	60 L.....	1.2.....	22, 76, 77.....	
	Propionitrile	3	UN2404	II	FLAMMABLE LIQUID.	POISON.	B14.....	None	201	243	243	243	5 L.....	60 L.....	1.3.....	8, 12, 40, 94.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(6) Packaging authorizations (§ 173.13)		Quantity limitations	Vessel stowage requirements	Cargo aircraft only	Cargo vessel	Passenger vessel or railcar	Other stowage provisions
							Exemptions	Bulk packaging						
(1)	Propenyl chloride.....	3	UN1615	II	FLAMMABLE LIQUID, CORROSIVE.	T8, T26.....	None	202	243	1 L.....	5 L.....	1,3.....	1.....	40
	Propenyl peroxide, <i>see Dipropenyl peroxide, etc.</i>	3	UN1276	II	FLAMMABLE LIQUID.	T1.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....	
	n-Propyl acetate.....	3	UN1277	II	FLAMMABLE LIQUID.	N34, T14...	None	202	242	5 L.....	60 L.....	1,3.....	5.....	12, 40
	Propyl alcohol, <i>see Propanol</i>	3	UN2364	III	FLAMMABLE LIQUID.	T1.....	150	203	242	60 L.....	220 L.....	1,3.....	1.....	
	Propylamine.....	3	UN1278	II	FLAMMABLE LIQUID.	N34, T14...	None	202	242	Forbidden	60 L.....	1,3.....	5.....	12
	n-Propyl benzene.....	6.1	UN2740	I	FLAMMABLE LIQUID, POISON, CORROSIVE.	B6, B14, B32, N1, N11, N26, N34, N34, 10,.....	None	227	244	Forbidden	Forbidden	1,3.....	5.....	21, 40, 95
	Propyl chloride.....	6.1	UN2611	II	POISON.....	T9.....	None	202	243	5 L.....	60 L.....	1,3.....	1,3.....	12, 21, 25, 40, 95
	1,2-Propylenediamine	8	UN2258	II	CORROSIVE.....	N1, N11, N34, T8, N36, T1.....	None	202	243	1 L.....	30 L.....	1,3.....	1,3.....	40
	Propylene dichloride.....	3	UN1279	II	FLAMMABLE LIQUID.	N1, N15, N34, T25,.....	None	202	242	5 L.....	60 L.....	1,3.....	1.....	
	Propylenimine, inhibited.....	3	UN1921	I	FLAMMABLE LIQUID.	N1, N15, N34, T20, T29,.....	None	201	243	1 L.....	30 L.....	1,3.....	5.....	40
	Propylene oxide.....	3	UN1280	I	FLAMMABLE LIQUID.	N1, N15, N34, T20, T29,.....	None	201	243	1 L.....	30 L.....	1,3.....	5.....	12
	Propylene see also Petroleum gases, liquidified.	2.1	UN1077	.....	FLAMMABLE GAS.	.....	306	304	314, 915	Forbidden	150 kg.....	1,3.....	1.....	40, 85
	Propylene tetramer.....	3	UN2850	III	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	220 L.....	1,3.....	1,3.....	
	Propyl formates.....	3	UN1281	II	FLAMMABLE LIQUID.	TB.....	150	202	242	5 L.....	60 L.....	1,3.....	1.....	
	n-Propyl isocyanate.....	3	UN2482	I	FLAMMABLE LIQUID, POISON.	N15, N26, T18, T26,.....	None	201	243	Forbidden	30 L.....	1.....	5.....	12, 40, 48
	Propyl mercaptan, <i>see Propanethiol</i>	3	UN1865	II	FLAMMABLE LIQUID.	T25.....	150	202	None	5 L.....	60 L.....	1,3.....	1.....	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations § 1730, etc.		Quantity limitations		Vessel stowage requirements 10)	Other storage provisions (10c)	
							Exempt exemptions	Bulk packing bulk pack- aging	Cargo aircraft only	Cargo vessel only			
1)	Sodium aluminum hydride	4.3	UN2835	I	DANGEROUS WHEN WET. POISON..... KEEP AWAY FROM FOOD.	A19, A20, N2.....	None	212	242	Forbidden....	50 kg..... 100 kg..... 200 kg.....	1..... 1.2..... 1.2.....	5..... 40, 95 34
	Sodium ammonium vanadate	6.1	UN2863	II	POISON..... KEEP AWAY	.....	None	212	242	25 kg..... 100 kg.....	100 kg..... 200 kg.....	1.2..... 1.2.....	40, 95 34
	Sodium arsenite.....	6.1	UN2473	III	POISON..... KEEP AWAY FROM FOOD.	.....	None	213	240	100 kg.....	100 kg.....	1.2..... 1.2.....	40, 95 34
	Sodium arsenate	6.1	UN1685	I	POISON..... KEEP AWAY	T15..... T15.....	None	212	240	25 kg..... 5 L.....	100 kg..... 60 L.....	1.2..... 1.2.....	95
	Sodium arsenite, aqueous solutions	6.1	UN1686	II	POISON..... KEEP AWAY	T15..... T15.....	None	203	248	5 L..... 60 L.....	100 kg..... 220 L.....	1.2..... 1.2.....	95
	Sodium arsenite, solid	6.1	UN2027	II	POISON..... POISON	.....	None	212	242	25 kg..... 25 kg.....	100 kg..... 100 kg.....	1.2..... 1.2.....	95
	Sodium azide	6.1	UN1687	II	.....	.....	None	212	242	25 kg..... 100 kg.....	100 kg..... 100 kg.....	1.2..... 1.2.....	36, 52, 95
	Sodium biftoride, see Sodium hydrogen fluoride.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Sodium bisulfite, solid or solution, see Sodium hydrogen sulfite, solid or solution.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Sodium bisulfite, solid or solution, see Sodium hydrogen sulfite, solid or solution.	4.3	UN1426	I	DANGEROUS WHEN WET.	.....	None	211	242	Forbidden....	15 kg..... 25 kg..... 100 kg..... 25 kg.....	1.3..... 1.2..... 1.2..... 1.2.....	5..... 46, 56 26, 95 46, 56
	Sodium bromate	5.1	UN1494	II	OXIDIZER..... POISON..... OXIDIZER.....	B10..... B10, N13, N34, T8.	None	212	240	5 kg..... 25 kg..... 5 kg.....	25 kg..... 100 kg..... 25 kg.....	1.2..... 1.2..... 1.2.....	46, 56 26, 95 46, 56
	Sodium cacodylate	6.1	UN1688	II	.....	.....	None	212	240	5 kg.....	25 kg.....	1.2..... 1.2.....	46, 56 46, 56
	Sodium chlorate	5.1	UN1495	II	.....	.....	.....	152	202	1 L.....	5 L.....	1.2..... 1.2.....	46, 56 46, 56
	Sodium chlorate mixed with dimethylbenzene, see Explosive blasting, type C.	5.1	UN2428	II	OXIDIZER..... OXIDIZER..... OXIDIZER.....	A2, B6, T8, B10, N13, N34, T8.	None	212	240	5 kg.....	25 kg.....	1.2..... 1.2.....	46, 56 46, 56
	Sodium chlorite, solution	5.1	UN1496	II	.....	.....	.....	154	202	1 L.....	30 L.....	1.2..... 1.2.....	46, 56 46, 56
	Sodium chloride solution with more than 5 per cent available chlorine.	8	UN1908	II	CORROSIVE.....	.....	.....	.....	.....	.....	.....	1.2..... 1.2.....	1..... 1.....
	Sodium chloroacetate	6.1	UN2659	III	KEEP AWAY FROM FOOD.	.....	.....	153	240	100 kg.....	200 kg.....	1.3..... 1.2.....	12, 13, 34
	Sodium cuprocyanide, solid	6.1	UN2316	I	POISON.....	.....	None	211	242	5 kg.....	50 kg.....	1.2..... 1.2.....	26, 40, 95
	Sodium cuprocyanide, solution	6.1	UN2317	I	POISON.....	T8, T26.....	None	201	243	1 L.....	30 L.....	1.2..... 1.2.....	40, 52, 95
	Sodium cyanide	6.1	UN1689	I	POISON.....	N74, N75, T18, T26.	None	211	242	5 kg.....	50 kg.....	1.2..... 1.2.....	26, 95
	Sodium 2-diazo-1-naphthol-4-sulfphonate	4.1	UN3040	II	FLAMMABLE SOLID.	.....	None	214	None	15 kg.....	50 kg.....	1..... 1.....	5..... 5.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Pack ing group	Labels	Special provisions	(8) Packaging authorizations (§173.***)		Quantity	(9) Limitations	Vessel stowage requirements		
							Non-bulk packing	Bulk packing					
(1)	Sodium dichloroisocyanurate or Sodium dichloro-s-triazinetrione, see Dichloroisocyanuric acid etc.	4.1	UN3041	II	FLAMMABLE SOLID.	(7)	(8A)	(8B)	None	15 kg.....	(10A)	(10B)	
	Sodium dinitro-o-cresolate, dry or wetted with less than 15 per cent water, by weight.	1.3C	UN0234						214	50 kg.....	1	5.....	
	Sodium dinitro-o-cresolate, wetted with not less than 15 per cent water, by weight.	4.1	UN1348		FLAMMABLE SOLID. POISON.	A19, A20, N2, N34, N41,	A19, A20...	None	211	1 kg.....	15 kg.....	1	
	Sodium dithioite or Sodium hydrosulfite, solid.	4.2	UN1384	II	SPONTANEOUSLY COMBUSTIBLE.	78.....	212	241	15 kg.....	50 kg.....	1.3.....	1.3.....	
	Sodium fluoride.....	6.1	UN1690	III	KEEP AWAY FROM FOOD.	78.....	153	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....
	Sodium fluoroacetate.....	6.1	UN2629	I	POISON.	78.....	None	211	242	5 kg.....	50 kg.....	5.....	26, 34
	Sodium fluorosilicate.....	6.1	UN2674	III	KEEP AWAY FROM FKDD.	78.....	153	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....
	Sodium hydrate, see Sodium hydroxide, solid.	4.3	UN1427	I	DANGEROUS WHEN WET.	78.....	None	211	242	Forbidden	15 kg.....	1.....	5.....
	Sodium hydrogen fluoride, solid.	8	UN2439	II	CORROSIVE.	N3, N34.....	154	212	240	16 kg.....	50 kg.....	1.3.....	12, 25,
	Sodium hydrogen fluoride, solution.....	8	UN2459	II	CORROSIVE.	N3, N34.....	154	202	242	1 L.....	30 L.....	1.2.....	26, 40
	Sodium hydrogen sulfate, solid.....	8	UN1821	III	CORROSIVE.	B2, N26, N34, 78, T26.	154	213	240	25 kg.....	100 kg.....	1.2.....	12, 25,
	Sodium hydrogen sulfate, solution.....	8	UN2837	II	CORROSIVE.	B2, N26, N34, 78, T26.	154	202	242	1 L.....	30 L.....	1.2.....	26, 40
D	Sodium hydrosulfide, solution.....	8	NA2922	II	CORROSIVE.	B2, N26,	154	202	242	1 L.....	30 L.....	1.2.....	1.2.....
	Sodium hydrosulfide, with less than 25 per cent water of crystallization.	4.2	UN2318	II	SPONTANEOUSLY COMBUSTIBLE.	78.....	None	212	241	15 kg.....	50 kg.....	1.3.....	1.3.....
	Sodium hydrosulfide with not less than 25 per cent water of crystallization.	8	UN2949	II	CORROSIVE.	N26.....	154	212	240	15 kg.....	50 kg.....	1.2.....	1.2.....
	Sodium hydroxide, see Sodium dihydroxide.....	8	UN1823	II	CORROSIVE.	B2, N34, T8.	154	212	240	15 kg.....	50 kg.....	1.2.....	1.2.....
	Sodium hydroxide, solid.....	8	UN1824	II	CORROSIVE.	B2, N34, T8.	154	202	242	1 L.....	30 L.....	1.2.....	1.2.....
	Sodium hypochlorite, solution, see Hypochlorite solutions.	4.3	UN1431	II	DANGEROUS WHEN WET.	A19.....	None	211	242	Forbidden	15 kg.....	1.3.....	1.....

Symbol	Hazardous materials descriptions and proper shipping names	Identification numbers	Hazard class	Packing group	Label	Special provisions	(8) Packaging authorizations [17/13]			(9) Quantity limitations			Vessel stowage requirements (10)	Other stowage provisions (10C)
							(8A)	(8B)	(8C)	(9A)	(9B)	(9C)		
1.1F	Sounding devices, explosive.....	UN0296												
1.1E	Sounding devices, explosive.....	UN0374												
1.2E	Sounding devices, explosive.....	UN0375												
1.4B	Squids, including electric squids and safety squids.	UN0422			I	CORROSIVE.....	B2, T8, T26.	154	202	242	1 L.....	30 L.....	1	1
1.4G	Squids	UN0423			II	CORROSIVE.....	A19.....	154	213	240	25 kg.....	100 kg.....	1,2.....	8
1.4S	Squids, <i>sea Hydrochloric acid</i>	UN0206			III	DANGEROUS WHEN WET.		None	211	242	Forbidden.....	15 kg.....	1,3.....	5
8	UN1827													
8	UN2440													
4.3	UN1433													
4.3	Stannic chloride, pentahydrate													
2.3	Steel swarf, see Ferrous metal borings, etc..	UN2676			I	POISON GAS, FLAMMABLE GAS.	10	None	304	245	Forbidden.....	Forbidden.....	1	40
5.1	Storage batteries, wet, see Batteries, wet etc..	UN1691			II	POISON.....		None	212	242	25 kg.....	100 kg.....	1,2.....	5
5.1	Strontium arsenite	UN1506			II	OXIDIZER.....	A1, B10, N13, N34, T8.	152	212	240	5 kg.....	25 kg.....	1,2.....	95
5.1	Strontium chlorate.....				III	OXIDIZER.....	A1, A28.....	152	213	240	25 kg.....	100 kg.....	1,2.....	56
5.1	Strontium perchlorate	UN1508			II	OXIDIZER.....	B10, T8.....	152	212	240	5 kg.....	25 kg.....	1,2.....	46
5.1	Strontium peroxide	UN1509			II	OXIDIZER.....	B10.....	152	212	240	5 kg.....	25 kg.....	1,2.....	13
4.3	Strontium phosphide	UN2013			I	DANGEROUS WHEN WET.	A19.....	None	211	None	Forbidden.....	15 kg.....	1,3.....	85
6.1	Strychnine or Strychnine salts.....	UN1692			I	POISON.....		None	211	242	5 kg.....	50 kg.....	1,2.....	40
6.1	Strychnine monomer, inhibited.....	UN2055			II	POISON.....		None	212	242	5 kg.....	100 kg.....	1,2.....	95
3					III	FLAMMABLE LIQUID.	T1	150	203	202	60 L.....	220 L.....	1,3.....	1
1.1L	Strychnic acid, see Trinitroresorcinol, etc..	UN0357												
1.2L	Substances, explosive, n.o.s.....	UN0358												
1.3L	Substances, explosive, n.o.s.....	UN0359												
4.3	Substances which in contact with water emit flammable gases, n.o.s., liquid.	UN2813			I	DANGEROUS WHEN WET.	A2, A19.....	None	201	244	Forbidden.....	1 L.....	1,3.....	40
4.3	Substances which in contact with water emit flammable gases, n.o.s., solid.	UN2813			I	DANGEROUS WHEN WET.		None	211	242	Forbidden.....	15 kg.....	1,3.....	5
3	Substituted nitrophenol pesticides, liquid, flammable, toxic, n.o.s., <i>flash point less than 23 degrees C.</i>	UN2780			I	FLAMMABLE LIQUID, POISON.		None	201	243	Forbidden.....	30 L.....	1,3.....	5
					II	FLAMMABLE LIQUID, POISON.		None	202	243	1 L.....	80 L.....	1,3.....	1

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Pack- ing group	Labels	Special provisions	(8) Authorizations (6)7c***			(9) Limitations			(10) Vessel stowage requirements			
							(6A)	(6B)	(6C)	(8A)	(8B)	(8C)	Cargo aircraft only	Cargo vessel	Pas- senger vessel	Other stowage provisions
		(2)														
(1)	Substituted nitrophenol pesticides, liquid, toxic, flammable, n.o.s., flash point not less than 23 degrees C.	6.1	UN3013	I	POISON, FLAMMABLE LIQUID.	T42.....	None	201	243	1 L.....	30 L.....	1	1	1	21, 40, 95	
	Substituted nitrophenol pesticides, liquid, toxic, n.o.s.	6.1	UN3014	II	POISON, FLAMMABLE LIQUID.	T14.....	None	202	243	5 L.....	60 L.....	1,2	1	1	21, 40, 95	
	Substituted nitrophenol pesticides, solid, toxic, n.o.s.	6.1	UN2779	III	KEEP AWAY FROM FOOD.	B1, T14.....	153	203	242	60 L.....	220 L.....	1,2	1,2	1	21, 34, 40	
	Succinic acid peroxide, see Disuccinic acid peroxide.															
	Sucrose octonitrate (dry)	Forbid- den														
	Sulfamic acid		UN2967	III	CORROSIVE, FLAMMABLE SOLID.	A1	154	213	240	25 kg.....	100 kg.....	1,2	1,2	1	40, 95	
	Sulfur		UN1350	III	CORROSIVE, FLAMMABLE SOLID.	A1	151	213	240	25 kg.....	100 kg.....	1,2	1,2	1	34, 40	
	Sulfur and chloride, loose mixtures of															
	Sulfur chloride (mono)	Forbid- den	UN1828	I	CORROSIVE, POISON.	10, B6, B14, B32, N26, N35.	None	227	244	Forbidden....	Forbidden....	1	5	8	19, 74	
	Sulfur chlorides (other than mono)		8	UN1828	I	CORROSIVE, POISON.	B4, B6, N1, N26, N35, T18, T27.	None	201	242	Forbidden....	2.5 L.....	1	1	8	
	Sulfur dichloride, see Sulfur chlorides		2.3	UN1079	II	POISON GAS.....	10, B14	None	304	314, 315	Forbidden....	1.3	5	5	40, 85, 95	
	Sulfur dioxide, liquefied															
	Sulfur dioxide solution, see Sulfurous acid		2.2	UN1080		NONFLAMMA- BLE GAS.	B13.....	306	304	244	75 kg.....	150 kg.....	1,3	1,3	85	
	Sulfur hexafluoride, liquefied		8	UN1831	I	CORROSIVE, POISON.	N1, N11, N26, N34	None	201	243	Forbidden....	2.5 L.....	1,2	1	14, 33, 40	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (§ 73,*)		Quantity limitations (9)		Vessel stowage requirements
							(8)	(9)	Passenger aircraft or railcar	Cargo aircraft only	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8A)	(9A)	Bulk packaging (B)	Non-bulk packaging (C)	(10A)
6.1	UN1700	II	III FLAMMABLE LIQUID. II POISON, FLAMMABLE SOLID.	T7, T80.....	150	203	242	60 L.....	220 L.....	1,3.....	5.....
D	Tear gas cartridges, see Ammunition, tear-producing, etc. Tear gas devices with more than 2 per cent tear gas substances, by mass. Tear gas devices, with not more than 2 per cent tear gas substances, by mass, see Aerosols, etc.	2.3	NA1693	II POISON GAS.....	10	None	340	None	Forbidden....	Forbidden....	1
	Tear gas grenades, see Tear gas candles Tear gas substances, n.o.s., liquid Tear gas substances, n.o.s., solid Tellurium hexafluoride	6.1 6.1 2.3	UN1693 UN1693 UN2195	II POISON..... II POISON..... II POISON GAS.....	10 B14, B31, 10	None None None	202 212 302	None None 244	Forbidden.... Forbidden.... Forbidden....	5 L..... 25 kg..... Forbidd...	1
	Terpene hydrocarbons, n.o.s.	3	UN2319	III FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L.....	220 L.....	1,3.....
	Terpinolene	3	UN2541	III FLAMMABLE LIQUID.	T1	150	203	242	60 L.....	220 L.....	1,3.....
	Tetraazido benzene quinone	Forbid-den	UN2504	III KEEP AWAY FROM FOOD.	T7	153	203	241	60 L.....	220 L.....	1,2.....
	Tetrabromobutane	6.1	UN1702	II POISON.....	N36	None	202	243	51	60 L.....	1,2.....
	Tetrachloroethane	6.1	UN1897	III KEEP AWAY FROM FOOD.	N36	153	203	241	60 L.....	220 L.....	1,2.....
	Tetrachloroethylene	6.1	UN1703	II POISON GAS.....	10	None	334	245	Forbidden....	Forbidden....	1
	Tetraethylammonium perchlorate (dry)	Forbid-den	UN1703	II POISON GAS.....	B14, B40, 10.	None	334	244	Forbidden....	Forbidden....	1
	Tetraethyl dithiopyrophosphate and gases in solution or Tetraethyl dithiopyrophosphate and gasses mixtures LC50 less than or equal to 200 ppm.	2.3	UN1703	I POISON.....	49	None	211	242	5 kg.....	50 kg.....	1
	Tetraethyl dithiopyrophosphate and gases in solution or tetraethyl dithiopyrophosphate and gasses mixtures LC50 over 200 up to 500 ppm.	6.1	UN1704	II POISON.....	49	None	212 153	242 240	25 kg..... 100 kg.....	100 kg..... 200 kg.....	1
	Tetraethyl dithiopyrophosphate, dry or mixture.	6.1	UN1704	I POISON.....	N76	None	201	243	1 L.....	30 L.....	1
	Tetraethyltenepentamine	8	UN2320	III CORROSIVE.....	T2	None	202	243	5 L.....	60 L.....	1
	Tetraethyl lead (lead)	6.1	NA1649	I POISON.....	B14, B32	None	154	203	241	60 L.....	1

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	Packaging authorizations (§ 173,***)		Quantity limitations (§ 10)		Vessel stowage requirements (§ 10)	
							(8A)	(8B)	(8C)	(8D)	(9A)	(9B)
(1)		(2)	(3)	(4)	(5)	(6)	III KEEP AWAY FROM FOOD.	T14.....	153	241	60 L.....	220 L.....
	Triazine pesticides, solid, toxic, n.o.s.	6.1	UN2763	I POISON.....			None	211	242	5 kg.....	50 kg.....	1.2.....
				II POISON.....			None	212	242	25 kg.....	100 kg.....	1.2.....
				III KEEP AWAY FROM FOOD.			153	240	100 kg.....	200 kg.....	1.2.....	
	Tri-(1-aziridinyl)phosphine oxide, solution	6.1	UN2501	II POISON.....			None	202	243	5 L.....	60 L.....	1.2.....
	Triethylamine.....	8	UN2542	II CORROSIVE.....			None	203	241	5 L.....	60 L.....	1.2.....
	Trichloroacetic acid.....	8	UN1839	III CORROSIVE.....			None	154	212	240	15 kg.....	50 kg.....
	Trichloroacetic acid, solution	8	UN2564	II CORROSIVE.....			154	202	242	1 L.....	30 L.....	1.....
	Trichloroacetyl chloride	8	UN2442	II CORROSIVE.....			None	202	242	Forbidden...	Forbidden...	1.....
	Trichlorobenzene, liquid.....	6.1	UN2321	III KEEP AWAY FROM FOOD.			T7.....	153	241	60 L.....	220 L.....	1.2.....
	Trichlorobutene.....	6.1	UN2322	II POISON.....			T8.....	None	202	243	5 L.....	60 L.....
	1,1,1-Trichloroethane.....	6.1	UN2831	III KEEP AWAY FROM FOOD.			N36, T7	153	203	241	60 L.....	220 L.....
	Trichlorethylene.....	6.1	UN1710	III KEEP AWAY FROM FOOD.			N36, T1	153	203	241	60 L.....	220 L.....
	Trichloroisocyanuric acid, dry	5.1	UN2468	II OXIDIZER.....			B10.....	152	212	240	6 kg.....	25 kg.....
	Trichloromethyl perchlorate	Forbid- den 4.3	UN1295	I DANGEROUS WHEN WET FLAMMABLE LIQUID, CORROSIVE.....			N16, N26, N34, T24, T26, B10.....	None	201	244	Forbidden...	Forbidden...
D	(mono-[Trichloro]-penta-s-triazine)one, dry (containing over 35% available chlorine). Trichloro-s-triazineone dry, containing over 35% available chlorine, see Trichloroisocyanuric acid, dry. Trichloroisocyanuric acid, dry, containing ortho-isomer with more than 3 per cent ortho-isomer.	5.1	NA2468	II POISON.....			N1, N16, N33, N34, TB.....	None	202	243	5 L.....	60 L.....
	Triethylamine.....	3	UN1296	II FLAMMABLE LIQUID.			T8.....	150	202	242	5 L.....	60 L.....

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identifica- tion numbers	Pack- ing Group	Labels	Special provisions	Packaging authorizations (§173.***)		Quantity limitations	Vessel storage requirements			
							(6)	(7)		(8A)	(8B)	(8C)	
(1)	Tetraethylene tetramine.....	8	UN2259	II	CORROSIVE.....	B2, T8.....	154	202	242	1 L.....	30 L.....	1.2....	
	Triethyl phosphite.....	3	UN2323	III	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	220 L.....	1.3....	
	Trifluoroacetic acid.....	8	UN2699	I	CORROSIVE.....	B4, N1, N3, N11, N26, N34, T18, T27,	None	201	242	0.5 L.....	2.5 L.....	1.3....	
												1....	
	Trifluoroacetyl chloride.....	2.3	UN3057	II	POISON GAS.....	10, B13, B33.....	None	304	244	Forbidden.....	Forbidden.....	1.3....	
	Trifluorochlorostyrene, inhibited.....	2.1	UN1982	III	FLAMMABLE GAS.	B13.....	306	304	314, 315	Forbidden.....	150 kg.....	1.3....	
	Trifluoroethane, compressed.....	2.1	UN2035	III	FLAMMABLE GAS.	B13.....	306	304	244	Forbidden.....	150 kg.....	1.3....	
	Trifluoromethane.....	2.2	UN1984	III	NONFLAMMA- BLE GAS.	.....	306	304	314, 315	75 kg.....	150 kg.....	1.3....
D	Trifluoromethane and chlorodifluorometh- ane mixture (constant boiling mixture) (R-502). See Refrigerant gas, n.o.s..	6.1	UN2948	II	POISON.....	.....	None	202	243	5 L.....	60 L.....	1.2....
	3-Trifluoromethylbenzene.....	6.1	UN2942	III	KEEP AWAY FROM FOOD.	.....	153	203	241	60 L.....	220 L.....	1.2....
	Forbid- den.....	3	UN2324	II	FLAMMABLE LIQUID.	T7, T30.....	150	203	242	5 L.....	60 L.....	1.3....	
						III	FLAMMABLE LIQUID.	150	203	242	60 L.....	220 L.....	1.3....
						III	FLAMMABLE LIQUID.	150	203	242	60 L.....	220 L.....	1.3....
	Triisocyanatoisocyanurate of isophorone-di- socyanate, solution, 70 per cent by weight.	3	UN2906	II	FLAMMABLE LIQUID.	T8, T31.....	150	202	242	5 L.....	60 L.....	1.3....	
	Triisopropyl borate.....	3	UN2616	II	FLAMMABLE LIQUID.	B1, T8, T31, B1, T1.....	150	202	242	80 L.....	220 L.....	1.3....	
						III	FLAMMABLE LIQUID.	150	202	242	1 L.....	30 L.....	1....
						III	POISON, FLAMMABLE LIQUID.	None	201	244	Forbidden.....	1.3....	5....
D	Trimethoxysilane.....	6.1	NA1982	I	FLAMMABLE LIQUID.	B3, B14, B32.....							12....
	Trimethyl acetyl chloride	8	UN2438	II	CORROSIVE, FLAMMABLE LIQUID.	B2, B6, N1, N11, N26, N34, T8, T26,							21, 25, 40....
	Trimethylamine, anhydrous.....	2.1	UN1983	III	FLAMMABLE GAS.	306	304	314, 315	Forbidden.....	150 kg.....	1....	40, 85

Simpl. nos.	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	Packaging (§ 173.401)		Quantity limitations	Vessel stowage requirements (10)	
							(8A)	(8B)			
(1)	Trimethylamine, aqueous solutions <i>not more than 50 per cent trimethylamine by weight.</i>	3	UN1297	I	FLAMMABLE LIQUID.	T42.....	150	202	242	5 L.....	1,3.....
	1,3,5-Trimethylbenzene (mesitylene) .....	.....	.....	III	FLAMMABLE LIQUID.	B1, T14.....	150	203	242	60 L.....	220 L.....
	Trimethyl borate	3	UN2325	III	FLAMMABLE LIQUID. POISON.	B14.....	None	201	243	60 L.....	220 L.....
	Trimethylchlorosilane	3	UN2416	II	FLAMMABLE LIQUID.	T14.....	150	202	242	5 L.....	60 L.....
	Trimethylcyclohexylamine	3	UN1298	I	FLAMMABLE LIQUID. POISON, CORROSIVE.	B14, B30, N1, N26, N34, 10.	None	226	244	Forbidden.....	Forbidden.....
	Trimethylene glycol diperchlorate	8	UN2326	III	CORROSIVE.	T2.....	154	203	241	5 L.....	60 L.....
	Trimethylhexamethylenediamines	8	UN2327	II	CORROSIVE.	T7.....	154	203	241	5 L.....	60 L.....
	Trimethylhexamethylenedisocyanate	6.1	UN2328	III	KEEP AWAY FROM FOOD.	T8.....	163	203	241	60 L.....	220 L.....
	Trimethyl nitromethane trinitrate .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	2,4,4-Trimethylpentyl-2-peroxy phenoxy acetate, <i>not more than 37 per cent in solution.</i>	5.2	UN2961	II	ORGANIC PEROXIDE.	.....	.....	.....	.....	.....	.....
	Trimethyl phosphite	3	UN2329	III	FLAMMABLE LIQUID.	T1.....	150	203	242	60 L.....	220 L.....
	1,3,5-Trimethyl-2,4,6-trinitrobenzene .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Trinitroacetic acid .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Trinitroacetonitrile .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Trinitroamine cobalt .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Trinitroaniline	1.1D	UN0153	.....	.....	.....	.....	.....	.....	.....	.....
	Trinitroanisole	1.1D	UN0213	.....	.....	.....	.....	.....	.....	.....	.....
	Trinitrobenzene, dry or wetted with less than 30 per cent water, by weight.	1.1D	UN0214	.....	.....	.....	.....	.....	.....	.....	.....
	Trinitrobenzenesulfonic acid	1.1L	UN0386	—	FLAMMABLE SOLID.	A2, A19, N2, N34, N41.	None	211	None	0.5 kg.....	1.....
	Trinitrobenzoic acid, dry or wetted with less than 30 per cent water, by weight.	1.1D	UN0215	.....	.....	.....	.....	.....	.....	5.....	36

(1) Symbols	Hazard class	Hazardous materials descriptions and proper shipping names	Identification numbers	Pack- ing group	Labels	Special provisions	Packaging authorizations [§ 173.111]		Quantity limitations		Vessel stowage requirements (10)
							(5)	(6)	(7)	(8A)	
4.1	4.1	Trinitrotoluene (TNT), wetted with not less than 30 per cent water, by weight.	UN1356	I	FLAMMABLE SOLID.	A2, A19, N2, N34, N41.	None	211	None	0.5 kg.....	Passenger aircraft only
		2,4,6-Tinitro-1,3,5-triazido benzene (dry).....								0.5 kg.....	Cargo aircraft only
	3	Tripropylamine	UN2260	II	FLAMMABLE LIQUID, CORROSIVE.	T8.....	None	202	243	1 L.....	Passenger aircraft or vanair
	3	Tripropylene	UN2057	II	FLAMMABLE LIQUID.	.....	150	202	242	5 L.....	Bulk packing
				III	FLAMMABLE LIQUID.	.....	150	203	242	60 L.....	No bulk packing
		Tris, bis-(bifluoroamino) diethoxy propane (TIVOPA).								220 L.....	Exempt
	1.1D	Tritonal.....	UN0390	I	POISON GAS.....	B14, B31, 10, B1.....	None	398	244	Forbidden....	Passenger vessel
	2.3	Tungsten hexafluoride	UN2196	III	FLAMMABLE LIQUID.	.....	150	203	242	60 L.....	Cargo vessel
	3	Turpentine	UN1299	II	FLAMMABLE LIQUID.	T1.....	150	202	242	5 L.....	Passenger aircraft only
	3	Turpentine substitute	UN1300	II	FLAMMABLE LIQUID.	B1, T1.....	150	203	242	60 L.....	Cargo aircraft only
				III	FLAMMABLE LIQUID.	.....	150	203	242	60 L.....	Passenger aircraft or vanair
		Undecane	UN2330	II	FLAMMABLE LIQUID.	B1, T1	150	203	242	220 L.....	Bulk packing
	7	Uranium hexafluoride, fissile (containing more than 1% U-235).	UN2977	.....	RADIOACTIVE, CORROSIVE.	.....	453	417	None	Passenger aircraft only	
	7	Uranium hexafluoride, fissile excepted or non-fissile.	UN2978	.....	RADIOACTIVE, CORROSIVE.	.....	421	425	425	220 L.....	Cargo aircraft only
	7	Uranium metal, pyrophoric	UN2979	.....	RADIOACTIVE, SPONTANEOUSLY COMBUSTIBLE.	.....	None	418	None	Passenger aircraft or vanair	
	7	Uranium nitrate hexahydrate solution	UN2980	.....	RADIOACTIVE, CORROSIVE.	.....	421,	415,	None	Bulk packing	
	7	Uranyl nitrate, solid	UN2981	.....	RADIOACTIVE, OXIDIZER.	.....	425,	416,	None	Passenger aircraft only	
5.1	5.1	Urea hydrogen peroxide	UN1511	III	OXIDIZER .....	.....	417	419	None	Passenger aircraft or vanair	
1.1D	4.1	Urea nitrate, dry or wetted with less than 20 per cent water, by weight.	UN0220	.....	A1, A29, N26.	.....	152	213	240	25 kg.....	Passenger aircraft only
	4.1	Urea nitrate, wetted with not less than 20 per cent water, by weight.	UN1357	I	FLAMMABLE SOLID.	.....	None	211	None	15 kg.....	Cargo aircraft only

Symbol	Hazardous materials descriptions and proper shipping names	Identification numbers	Packaging group	Labels	Special provisions	Packaging authorizations (§173, etc.)	Quantity limitations		Vessel stowage requirements (10)	Other stowage provisions (10C)
							(8A)	(8B)		
(1)	Urea peroxide, see Urea hydrogen peroxide. Valeraldehyde..... Valeric acid, see Corrosive liquids, no. 5. Valeric chloride.....	3 UN2058 8 UN5502	II II	FLAMMABLE LIQUID. CORROSIVE.....	T1..... B2, N1, N11, N26, N34, T8, B2, B16, N1, N11, N16, N26, N34, T8, T26.	150 154 202 154	202 242 1 L..... 242	60 L..... 30 L..... 30 L.....	1,3..... 1..... 1.....	40 40 40
	Vanadium oxytrichloride.....	8 UN2443	II	CORROSIVE.....	B4, N1, N11, N26, N34, T8, T26.	None None 212 201	242 242	100 kg..... 25 kg..... 25 kg.....	1,2..... 1,2..... 1,2.....	95 80, 40
	Vanadium pentoxide, nonfused form..... Vanadium tetrachloride.....	6.1 UN2862 8 UN2444	II I	POISON..... CORROSIVE.....	B4, N1, N11, N26, N34, T8, T26.	154 None None 212 220	240 242 242 242 None	100 kg..... 25 kg..... 25 kg..... No limit.....	1,2..... 1,2..... 1,2..... No limit.....	40 95 95 40
AW	Vanadium trichloride..... Vanadium trioxide, nonfused form..... Vanadyl sulfate..... Vehicles, self-propelled including internal combustion engines or other apparatus containing an internal combustion engine or electric storage battery (see also Wheel chair, electric). Very signal cartridge, see Cartridges, signal.... Vinyl acetate, inhibited.....	8 UN2475 6.1 UN2860 6.1 UN2931 9 None	III II II III	CORROSIVE..... POISON..... POISON..... CLASS 9	T8..... B13..... T7..... B44..... GAS.	150 306 150 306 306	202 304 202 304 314,	5 L..... 244 242 242 315,	60 L..... 160 kg..... 60 L..... 150 kg..... 60 L.....	1,3..... 1,2..... 1,2..... 1,2..... 1,2.....
	Vinyl bromide, inhibited..... Vinyl butyrate, inhibited..... Vinyl chloride, inhibited..... Vinyl chloroacetate..... Vinyl ethyl ether, inhibited..... Vinyl fluoride, inhibited..... Vinylidene chloride, inhibited..... Vinyl isobutyl ether, inhibited	3 UN1301 2.1 UN1085 3 UN2838 2.1 UN1086 6.1 UN2589 3 UN1302 2.1 UN1986 3 UN1303 3 UN1304	II II II II II I I 1 II	FLAMMABLE LIQUID. FLAMMABLE GAS. FLAMMABLE LIQUID. FLAMMABLE GAS. POISON..... FLAMMABLE LIQUID. FLAMMABLE GAS. FLAMMABLE LIQUID. FLAMMABLE LIQUID.	T14..... N1, N16, T14, B43..... T14..... N1, N16, T14, B43..... T23, T29... T8..... T8.....	None None None None None None None 150 150	202 201 243 306 201 243 315 202 150	5 L..... 1 L..... 314, 315 314, 315 314, 315 30 L..... 30 L..... 150 kg..... 30 L..... 60 L.....	1,3..... 1,3..... 1,3..... 1,3..... 1,3..... 1,3..... 1,3..... 1,3..... 1,3.....	40, 85 21, 95 12 12 40, 85 40, 85 12 12

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packing group	Labels	Special provisions	(6) Packaging authorizations (<i>Regulation 72, etc.</i>)			(5) Quantity limitations			Vessel stowage requirements (<i>10</i>)	
							(BA)	(BB)	(BC)	(SA)	(98)	(10A)	(105)	
1.1	Vinyl methyl ether, inhibited	2.1	UN1087	(5)	(6)	FLAMMABLE GAS.	B44	306	304	314, 315	Forbidden	150 kg	1,3	40, 85
	Vinyl nitrate polymer	Forbid- den 6.1	UN3073	II	POISON, FLAMMABLE LIQUID.	T8	None	212	243	5 L	60 L	1,3	1,3	Other storage provisions (10C)
	Vinyl pyridene, inhibited			III	KEEP AWAY FROM FOOD.	T8	153	213	241	60 L	220 L	1,3	1,3	
	Vinyl toluene, inhibited mixed isomers	3	UN2618	II	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L	220 L	1,3	1,3	
	Vinyltrichlorosilane	3	UN1395	I	FLAMMABLE LIQUID, CORROSIVE.	B6, N1, N26, N34, T14, T26,	None	201	243	Forbidden	25 L	1,3	1	40
	Warheads, rocket with <i>bursting or expelling charge</i> . Warheads, rocket with <i>bursting or expelling charge</i> .	1.4D	UN0370											
	Warheads, rocket with <i>bursting charge</i>	1.4F	UN0371											
	Warheads, rocket with <i>bursting charge</i>	1.1D	UN0286											
	Warheads, rocket with <i>bursting charge</i>	1.2D	UN0287											
	Warheads, rocket with <i>bursting charge</i>	1.1F	UN0369											
	Warheads, torpedo with <i>bursting charge</i>	1.1D	UN0221											
A	Water reactive substances, n.o.s., see Substances which in contact with water, etc. White chair, electric (< spillable or non-spillable type batteries). White acid, see Hydrofluoric acid mixtures Wood preservatives, liquid	9	None	III	CLASS 9			222	222	None	No limit	1,2	1,2	
	3 UN1306	II	FLAMMABLE LIQUID.	T7, T30	150	202	242	5 L	60 L	1,3	1	40		
		III	FLAMMABLE LIQUID.	B1, T7, T30, B13	150	203	242	60 L	220 L	1,3	1,3	40		
	2.2 UN2036		NONFLAMMA- BLE GAS.		306	302	244	75 kg	150 kg	1,3	1,3	85		
	2.2 UN2591		NONFLAMMA- BLE GAS.		320	318	50 kg	500 kg	500 kg	1,3	1	85		
	3 UN1307	II	FLAMMABLE LIQUID.	T1	150	202	242	5 L	60 L	1,3	1	40		
		III	FLAMMABLE LIQUID.	B1, T1	150	203	242	60 L	220 L	1,3	1,3	40		
Xenon														
Xylenes														
	6.1 UN2261	I	POISON.	T8	None	212	243	25 kg	100 kg	1,2	1,2	40, 95		
	6.1 UN1711	II	POISON.	T14	None	202	243	5 L	60 L	1,2	1,2	26, 95		
	6.1 UN1701	I	POISON.	B14, B30, N1, N11, N26, N33, 10,	None	226	244	Forbidden	Forbidden	1	5	40, 95		

Symbol	Hazardous materials descriptions and proper shipping names	Identification numbers	Hazard class	Packing group	Labels	Special provisions	(8) Packings authorizations (§ 173.1)		(9) Quantity limitations		Vessel stowage requirements (10)	Other provisions/ stowage (10C)	
							(5)	(6)	(7)	(8A)	(8B)		
(1)	p-Xylyl diazide.....		Forbidden.....	.....	II OXIDIZER..... II POISON.....	B10..... None	212 212	240 242	6 kg..... 25 kg.....	25 kg..... 100 kg.....	1.3..... 1.2.....	5..... 1.2.....
	Zinc ammonium nitrate.....	5.1 UN1512	.....	.....	.....	.....	213	241	25 kg.....	100 kg.....	1.3.....	1.3.....
	Zinc arsenate or Zinc arsenite or Zinc arsenite and Zinc arsenite mixtures.....	6.1 UN1712	.....	.....	.....	.....	213	241	25 kg.....	100 kg.....	1.3.....	1.3.....
	Zinc ashes.....	4.3 UN1435	III	DANGEROUS WHEN WET.	A1, A19.....	None	213	241	25 kg.....	100 kg.....	1.3.....	1.3.....	
	Zinc bisulfite solution see Bisulfites, inorganic aqueous solutions, n.o.s.....	5.1 UN2469	III	OXIDIZER..... OXIDIZER.....	A1, A20..... B10, N13, N34,	152 152	213 212	240 240	25 kg..... 5 kg.....	100 kg..... 25 kg.....	1.2..... 1.2.....	1.2..... 1.2.....	
	Zinc bromate.....	5.1 UN1513	II	OXIDIZER.....	.....	.....	213	240	25 kg.....	100 kg.....	1.2.....	1.2.....
	Zinc chloride, anhydrous.....	8 UN2331	III	CORROSIVE.....	T7.....	154	203	241	6 L.....	60 L.....	1.2.....	1.2.....	
	Zinc chloride, solution.....	8 UN1840	III	CORROSIVE.....	POISON.....	.....	211	242	5 kg.....	50 kg.....	1.2.....	1.2.....
	Zinc cyanide.....	6.1 UN1713	I	POISON.....	CLASS 9.....	155	204	240	100 kg.....	200 kg.....	1.2.....	1.2.....
	Zinc dithionite or Zinc hydrosulfite.....	9 UN1931	III	.....	.....	.....	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....
	Zinc ethyl, see Diethylzinc.....	.....	.....	.....	.....	.....	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....
	Zinc fluorosilicate.....	6.1 UN2855	III	KEEP AWAY FROM FOOD.	.....	.....	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....
	Zinc hydroxulfite, see Zinc dithionite.....	.....	.....	.....	.....	.....	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....
	Zinc muriate solution, see Zinc chloride, solution.....	.....	.....	.....	.....	.....	213	240	100 kg.....	200 kg.....	1.2.....	1.2.....
	Zinc nitrate.....	5.1 UN1514	II	OXIDIZER.....	B10.....	152	212	240	5 kg.....	25 kg.....	1.2.....	1.2.....	
	Zinc permanganate.....	5.1 UN1515	II	OXIDIZER.....	B10.....	152	212	240	5 kg.....	25 kg.....	1.2.....	1.2.....	
	Zinc peroxide.....	5.1 UN1516	II	OXIDIZER.....	B10.....	152	212	240	5 kg.....	25 kg.....	1.2.....	1.2.....	
	Zinc phosphide.....	4.3 UN1714	I	DANGEROUS WHEN WET, POISON.	A19.....	None	211	None	Forbidden.....	15 kg.....	1.3.....	1.3.....	
	Zinc powder or Zinc dust.....	4.3 UN1436	II	DANGEROUS WHEN WET, SPONTANEOUSLY COMBUSTIBLE.	A19.....	None	212	242	15 kg.....	50 kg.....	1.3.....	1.3.....	
	Zinc resinate.....	4.1 UN2714	III	FLAMMABLE SOLID.	A1.....	151	213	240	25 kg.....	100 kg.....	1.3.....	1.3.....	
	Zinc selenate, see Selenates or Selenites.....	.....	.....	.....	.....	.....	213	240	25 kg.....	100 kg.....	1.3.....	1.3.....
	Zinc selanite, see Selanates or Selanites.....	.....	.....	.....	.....	.....	213	240	25 kg.....	100 kg.....	1.3.....	1.3.....
	Zinc silicofluoride, see Zinc fluorosilicate.....	.....	.....	.....	.....	.....	213	240	25 kg.....	100 kg.....	1.....	5.....
	Zirconium, dry, coiled wire, finished metal sheets, strip (thinner than 254 microns but not thinner than 18 microns), Zirconium, dry, finished sheets, strip or coiled wire.....	4.1 UN2858	III	FLAMMABLE SOLID.	A1.....	151	213	240	25 kg.....	100 kg.....	1.3.....	1.3.....	
	Zirconium, dry, solid, finished metal sheets, strip or coiled wire.....	4.2 UN2009	III	SPONTANEOUSLY COMBUSTIBLE.	A1, A19.....	None	213	240	25 kg.....	100 kg.....	1.3.....	1.3.....	
	Zirconium hydride.....	4.1 UN1437	II	FLAMMABLE SOLID.	A19, A20, N34,	None	212	240	15 kg.....	50 kg.....	1.3.....	1.3.....	
	Zirconium nitrate.....	5.1 UN2728	III	OXIDIZER.....	A1, A29.....	152	213	240	25 kg.....	100 kg.....	1.2.....	1.2.....	

Symbol	Hazardous materials descriptions and proper shipping names	Hazard class	Identification numbers	Packaging group	Labels	Special provisions	(8) Packaging authorizations		Quantity limitations		Visible storage requirements				
							(7)	(8A)	(8B)	(8C)	(9A)	(9B)			
(1)	Zirconium piaramate, dry or wetted with less than 20 per cent water, by weight. Zirconium piaramate, wetted with not less than 20 per cent water, by weight. Zirconium powder, dry (a) mechanically produced, particle size between 3 and 53 microns; (b) chemically produced, particle size between 10 and 840 microns. Zirconium powder, wetted with not less than 25 per cent water (a visible excess of water must be present) (a) mechanically produced, particle size less than 53 microns; (b) chemically produced, particle size less than 840 microns. Zirconium scrap.	1.3C 4.1 4.2 4.1	UN0296 UN1517 UN2008 UN1358	(3) (4) (5) (6)			FLAMMABLE SOLID. SPONTANEOUSLY COMBUSTIBLE.	N34, N41 A19, A20, N5, N34.	None 211 212 212	None 241 241 241	1 kg..... 15 kg..... 50 kg..... 15 kg.....	15 kg..... 50 kg..... 50 kg..... 50 kg.....	1..... 1..... 1..... 1.....	5..... 5..... 5..... 5.....	36
D	Zirconium sulfate Zirconium suspended in a liquid Zirconium tetrachloride	8 3 8	NA9163 UN1308 UN2503	III II III			SPONTANEOUSLY COMBUSTIBLE. CORROSIVE FLAMMABLE LIQUID. CORROSIVE	B10, N34... N34 N34	None None 154	240 242 240	Forbidden.... Forbidden.... 26 kg.....	Forbidden.... Forbidden.... 100 kg.....	1..... 1..... 1.....	5..... 5..... 12	12

§ 172.102 Special provisions.

(a) *General.* When Column 7 of the § 172.101 Table refers to a special provision for a hazardous material, the meaning and requirements of that provision are as set forth in this section. When a special provision specifies packagings or packaging requirements, they are in addition to the standard requirements for all packagings prescribed in § 173.24 of this subchapter and any other applicable packaging requirements in Subparts A and B of Part 173 of this subchapter.

(b) *Description of codes for special provisions.* Special provisions may contain packaging provisions, prohibitions, exceptions from requirements for particular quantities or forms of materials and requirements or prohibitions applicable to specific modes of transportation, as follows:

(1) A code consisting only of numbers (for example, "11") is multi-modal in application and may apply to bulk and non-bulk packagings.

(2) A code containing the letter "A" refers to a special provision which applies only to transportation by aircraft.

(3) A code containing the letter "B" refers to a special provision which applies only to bulk packaging requirements. Unless otherwise provided in this subchapter, these special provisions do not apply to IM portable tanks.

(4) A code containing the letter "H" refers to a special provision which applies only to transportation by highway.

(5) A code containing the letter "N" refers to a special provision which applies only to non-bulk packaging requirements.

(6) A code containing the letter "R" refers to a special provision which applies only to transportation by rail.

(7) A code containing the letter "T" refers to a special provision which applies only to transportation in IM portable tanks.

(8) A code containing the letter "W" refers to a special provision which applies only to transportation by water.

(c) *Tables of special provisions.* The following tables list, and set forth the requirements of, the special provisions referred to in Column 7 of the § 172.101 Table.

(1) *Numeric provisions.* These provisions are multi-modal and apply to bulk and non-bulk packagings:

Code	Special provisions
10.....	Packagings shall be marked "INHALATION HAZARD" in accordance with Subpart D of Part 172.

Code	Special provisions
11.....	The hazardous material must be packaged as either a liquid or a solid, as appropriate, depending on its physical form at 55 °C (131 °F) at atmospheric pressure.
12.....	Manufacturing impurities may cause this material to be toxic by inhalation. If toxic by inhalation, the shipping description, Poisons liquids, n.o.s., <i>inhalation hazard</i> , must be used.
13.....	For materials which meet the criteria for inhalation toxicity in § 173.133 of this subchapter at the Packing Group I level, the proper shipping name is "Poisonous liquids, corrosive, n.o.s., <i>inhalation hazard</i> , <i>Packing Group I, Zone B</i> ."
17.....	Aqueous solutions of hydrogen peroxide containing less than 8 percent hydrogen peroxide are not subject to the requirements of this subchapter. If the hazardous material is in dispersion in organic liquid, the organic liquid must have a flash point above 50 °C (122 °F).
22.....	Sodium carbonate perhydrate is considered non-hazardous.
27.....	The dehydrated sodium salt of dichloroisocyanuric acid is not subject to the requirements of this subchapter.
31.....	Materials which have undergone sufficient heat treatment to render them nonhazardous are not subject to the requirements of this subchapter.
33.....	Ammonium nitrites and mixtures of an inorganic nitrite with an ammonium salt are prohibited.
42.....	Fish meal or fish scrap may not be offered for transportation if the temperature of the material exceeds 49 °C (120.2 °F).
66.....	The organic peroxide included in a polyester resin kit must be specifically listed in the § 172.101 Table and be permitted for transportation.

(2) "A" codes. These provisions apply only to transportation by aircraft:

Code	Special provisions
A1.....	Single packagings are not permitted on passenger aircraft.
A2.....	Single packagings are not permitted on aircraft.
A4.....	Liquids having an inhalation toxicity of Packing Group I are not permitted on aircraft.
A5.....	Solids having an inhalation toxicity of Packing Group I are not permitted on passenger aircraft and may not exceed a maximum net quantity per package of 16 kg (35.3 pounds) on cargo aircraft.
A19....	Combination packagings consisting of outer fiber drums or plywood drums, with inner plastic packagings, are not authorized for transportation by aircraft.
A20....	Plastic bags as inner receptacles of combination packagings are not authorized for transportation by aircraft.
A29....	Combination packagings consisting of outer expanded plastic boxes with inner plastic bags are not authorized for transportation by aircraft.
A30....	Ammonium permanganate is not authorized for transportation on aircraft.
A33....	Ammonium nitrites and mixtures of an inorganic nitrite with an ammonium salt are prohibited.

(3) "B" codes. These provisions apply only to bulk packagings:

Code	Special provisions
B1.....	If the material has a flash point at or above 100°F (37.8°C) and below 200°F (93.3°C), then the bulk packaging requirements of § 173.241 of this subchapter are applicable. If the material has a flash point of less than 100°F, then the bulk packaging requirements of § 173.242 of this subchapter are applicable.
B2.....	MC 306 cargo tanks, DOT 57 portable tanks, and riveted tank car tanks are not authorized.
B4.....	Riveted tank car tanks, AAR 206 tank car tanks, MC 308 cargo tanks, and DOT 57 portable tanks are not authorized.
B5.....	Lading temperature may not exceed 240°F (115.6°C). Only the following bulk packagings are authorized for ammonium nitrate solutions with 15 percent or more water: DOT 103 ALW, 111A50 ALW tank car tanks and MC 307 and MC 312 cargo tanks with at least 25 psig (172.4 kPa) design pressure. The packaging shall be designed for a working temperature of at least 250°F (121.1°C). Transportation by vessel is not authorized.
B6.....	Packagings shall be made of steel.
B7.....	Safety relief devices are not authorized on multi-unit tank car tanks. Openings for safety relief devices shall be plugged or blank flanged.
B8.....	Packagings shall be made of nickel, stainless steel, or steel with nickel, stainless steel, lead or other suitable corrosion resistant metallic lining.
B9.....	Bottom outlets are not authorized.
B10.....	Packagings must be leak tight.
B11.....	Tank car tanks must have a test pressure of at least 300 psi (2,068.5 kPa). Cargo and portable tanks must have a design pressure of at least 175 psig (1,206.6 kPa). Pressure relief devices on any tank must be set to function at 175 psig (1,206.6 kPa). Tank car tanks shall be marked with the name of the lading in accordance with the requirements of § 172.330.
B13.....	For compressed gases, §§ 173.314 and 173.315 of this subchapter specify additional requirements.
B14.....	Each tank, except a multi-unit tank car tank, shall be insulated by completely covering it with at least 100 millimeters (3.94 inches) of cork or other suitable insulation material of sufficient thickness that the overall thermal conductance is not more than 0.080 Btu per hour per square foot per degree Fahrenheit differential.
B15.....	Packagings shall be protected with non-metallic linings impervious to the lading unless tanks conform to the provisions of § 178.343-2(c) of this subchapter.
B16.....	The lading shall be completely covered with an inert gas.
B17.....	Packagings shall be made of aluminum.
B18.....	Open steel hoppers or bins are authorized.
B19.....	The hazardous material may not exceed 45% concentration in a non-volatile solvent.
B20.....	The hazardous material may not exceed 50% concentration in a non-volatile solvent.
B21.....	The hazardous material may not exceed 60% concentration in a non-volatile solvent.
B22.....	The hazardous material may not exceed 90% concentration in a non-volatile solvent.
B23.....	Tanks shall be made of steel that is rubber lined or unlined. Unlined tanks shall be passivated before being placed in service. If unlined tanks are washed out with water, they shall be repassivated prior to return to service. Lading in unlined tanks must be inhibited so that the corrosive effect on steel is not greater than that of hydrofluoric acid at 65% concentration.
B24.....	Molybdenum content of stainless steel may not exceed 0.5%.
B25.....	Packagings shall be made from monel or nickel or monel-lined or nickel-lined steel.
B26.....	Tanks shall be insulated. Insulation must be at least 4 inches (101.6mm) except that insulation thickness may be reduced to 2 inches (50.8 mm) over exterior heater coils. Interior heating coils are not authorized. The lading shall be immersed in water or blanketed with an inert gas and loaded at a temperature not exceeding 140°F (60°C). After unloading, the tank shall be filled to its entire capacity with an inert gas or with water having a temperature not exceeding 140°F (60°C). Before a tank car tank is offered for return movement, it shall be placarded with "FLAMMABLE SOLID-RESIDUE" placards as described in § 172.525. When lading is immersed in water, tanks may not have bottom outlets.
B27.....	Tanks must have a service pressure of 150 psig (1,034.3 kPa). Tank car tanks must have a test pressure rating of 200 psi (1,379 kPa). Lading shall be blanketed at all times with a dry inert gas at a pressure not to exceed 15 psig (103.4 kPa).
B28.....	Packagings shall be made of stainless steel.
B29.....	When the lading is transported in a molten state, tanks may be equipped with heating coils except that interior heating coils are prohibited. Standpipe heaters for tank cars are permitted.

Code	Special provisions	Code	Special provisions	Code	Special provisions
B30...	MC 330 and MC 331 cargo tanks and DOT 51 portable tanks shall be made of stainless steel except that steel other than stainless steel may be used in accordance with the provisions of § 173.24b(c). Thickness of stainless steel for tank shell and heads for cargo tanks and portable tanks must be the greater of 0.300 inch (7.62 mm) or the thickness required for a tank with a design pressure at least equal to 1.5 times the vapor pressure of the lading at 115°F (46.1°C). Notwithstanding the provisions of § 173.244(a) of this subchapter, only the following tank car tanks are authorized: DOT 105J500W tank car tanks and DOT Class 108 and 110 multi-unit tank car tanks; DOT 105S300W tank car tanks built before April 1, 1988; and, DOT 105A500W tank car tanks built before April 1, 1988 and equipped with at least 10 inches (25.4 cm) of polyurethane foam insulation or with a thermal protection system meeting the requirements of § 179.105-4 of this subchapter.	B35...	If LC50 is more than 200 ppm but not more than 1000 ppm, Note B31 applies. If LC50 is more than 1000 ppm but not more than 3000 ppm, Special Provision B33 applies. If LC50 is more than 3000 ppm but not more than 5000 ppm, Note B34 applies.	N2....	For combination packagings, if glass inner packagings (including ampoules) are used, they must be packed with cushioning material in tightly closed metal receptacles before packing in outer packagings.
B31...	MC 330 and MC 331 cargo tanks and DOT 51 portable tanks shall be made of stainless steel except that steel other than stainless steel may be used in accordance with the provisions of § 173.24b(c). Thickness of stainless steel for tank shell and heads for cargo tanks and portable tanks must be the greater of 0.300 inch (7.62 mm) or the thickness required for a tank with a design pressure at least equal to 1.5 times the vapor pressure of the lading at 115°F (46.1°C). Bottom outlets are not authorized on tank car tanks. Notwithstanding the provisions of §§ 173.243(a) and 173.244(a) of this subchapter, only the following tank car tanks are authorized: DOT 105J300W, 112J340W, 112T340W, and 114T340W tank car tanks; DOT Class 106 and 110 multi-unit tank car tanks; DOT 105A300W tank car tanks built before April 1, 1989; and, only for materials which do not meet the definition for a flammable gas (see § 173.115(a) of this subchapter), DOT 105J300ALW tank car tanks.	B36...	Only DOT 105J500W tank car tanks or DOT Class 106 or 110 tank car tanks are authorized.	N3....	Glass inner packagings are permitted in combination or composite packagings only if the hazardous material is free from hydrofluoric acid.
B32...	MC 330 and MC 331 cargo tanks and DOT 51 portable tanks shall be made of stainless steel except that steel other than stainless steel may be used in accordance with the provisions of § 173.24b(c). Thickness of stainless steel for tank shell and heads for cargo tanks and portable tanks must be the greater of 0.250 inch (6.35 mm) or the thickness required for a tank with a design pressure at least equal to 1.3 times the vapor pressure of the lading at 115°F (46.1°C). Bottom outlets are not authorized on tank car tanks. Notwithstanding the provisions of §§ 173.243(a) and 173.244(a) of this subchapter, only the following tank car tanks are authorized: DOT 105J300W, 112J340W, 112T340W, 114J340W, and 105J300ALW tank car tanks; DOT Class 106 and 110 multi-unit tank car tanks; DOT 105A100W1 and 111A100W4 tank car tanks built before April 1, 1989; and, DOT 111A100W1 and 111A100W2 that are insulated in accordance with § 178.200-4 of this subchapter, are equipped with safety relief valves in accordance with § 178.200-18 of this subchapter and were built before April 1, 1989.	B37...	The amount of nitric oxide charged into any tank car tank may not exceed 200 psig (1,379 kPa) at 70°F (21.1°C). The amount of nitric oxide charged into cargo or portable tanks may not exceed 200 psig (1,379 kPa) at 70°F (21.1°C) or 0.55 times tank design pressure (MAWP) whichever is less.	N4....	For combination or composite packagings, glass inner packagings, other than ampoules, are not permitted.
B33...	MC 330 or MC 331 cargo tanks and DOT 51 portable tanks shall be made of stainless steel except that steel other than stainless steel may be used in accordance with the provisions of § 173.24b(c). Thickness of stainless steel for tank shell and heads for cargo tanks and portable tanks must be the greater of 0.250 inch (6.35 mm) or the thickness required for a tank with a design pressure at least equal to 1.2 times the vapor pressure of the lading at 115°F (46.1°C). Bottom outlets are not authorized on tank car tanks. Notwithstanding the provisions of § 173.243(a) and 173.244(a) of this subchapter, only the following tank car tanks are authorized: DOT 105J300W, 112J340W, 112T340W, 114J340W, and 114T340W tank car tanks; DOT Class 106 and 110 multi-unit tanks; DOT 105A200W tank car built before April 1, 1989; and, only for materials which do not meet the definition for a flammable gas (see § 173.115(a) of this subchapter), DOT 105J300ALW tank car tanks.	B38...	If LC50 is more than 1000 ppm but not more than 3000 ppm, Note B31 applies. If LC50 is more than 3000 ppm but not more than 5000 ppm, Special Provision B33 applies.	N5....	Glass materials of construction are not authorized for any part of a packaging which is normally in contact with the hazardous material.
B34...	MC 330 and MC 331 cargo tanks and DOT 51 portable tanks shall be made of stainless steel with a design pressure at least equal to 1.1 times the vapor pressure of the lading at 115°F (46.1°C). Steel other than stainless steel may be used in accordance with the provisions of § 173.24b(c).	B39...	Mixtures with flashpoints less than 23°C (73.4°F) must bear FLAMMABLE placards as prescribed in Subpart F of Part 172.	N6....	Battery fluid packaged with electric storage batteries, wet or dry, must conform to the packaging provisions of § 173.159, paragraphs (g) or (h), of this subchapter.
		B40...	For liquid materials which are toxic by inhalation (see § 173.133(e)(2) of this subchapter), if LC50 is 200 ppm or less, Note B30 applies; if LC50 is more than 200 ppm but not more than 1000 ppm, Special Provision B32 applies.	N11....	For combination packagings, if plastic inner packagings are used, they must be packed in tightly closed metal receptacles before packing in outer packagings.
		B41...	Notwithstanding the periodic retest intervals specified in Rotable Table 1 of 173.31 of this subchapter, the retest interval for safety relief valves on each single-unit tank car tank is 2 years and the retest interval on the tank and interior heater systems, if any, is as follows:	N12....	Plastic packagings are not authorized.
			a. For a tank 10 years old or newer, 5 years;	N13....	For combination packagings, if plastic bags are used, they must be packed in tightly closed metal receptacles before packing in outer packagings.
			b. For a tank older than 10 years but not older than 22 years, 3 years; and	N14....	Only plastic bags are permitted as inner packagings for combination packagings.
			c. For a tank older than 22 years, 1 year.	N15....	Plastic materials of construction are not authorized for any part of a packaging which is normally in contact with the hazardous material.
		B42...	Each DOT 105A, 105S and 105J tank car tank shall be stenciled DOT105A200W, DOT105S200W, or DOT 105J200W, respectively. Each tank car tank shall be equipped with a safety relief valve with a start-to-discharge pressure of 150 psig (1,034.3 kPa).	N16....	Plastic single packagings are not authorized.
		B43...	For single unit tank car tanks built after June 30, 1982, tank anchor to tank shell fillet welds must be examined by a suitable non-destructive testing method to ensure that welds are free from cracks or other detrimental defects.	N17....	Plastic composite packagings are not authorized.
		B44...	All parts of valves and safety relief devices in contact with lading must be of a material which will not cause formation of acetylides.	N25....	Steel single packagings are not authorized.
		B45...	Safety relief valves must be equipped with stainless steel or platinum frangible discs approved by the AAR Committee on Tank Cars.	N26....	Steel packagings must be corrosion-resistant or have protection against corrosion.
		B46...	The detachable protective housing for the loading and unloading valves of multi-unit tank car tanks must withstand tank test pressure and must be approved by the Director, OHMT.	N32....	Aluminum materials of construction are not authorized for single packagings.
		B49...	Tanks equipped with interior heater coils are not authorized. Single unit tank car tanks must have a safety relief valve set at no more than 225 psig (1551.4kPa).	N33....	Aluminum drums are not authorized.
		B50...	Each valve outlet of a multi-unit tank car tank must be sealed by a threaded solid plug or a threaded cap with inert luting or gasket material. Valves must be of stainless steel and the caps, plugs, and valve seats must be of a material that will not be deteriorated by contact with the lading.	N34....	Aluminum materials of construction are not authorized for any part of a packaging which is normally in contact with the hazardous material.
		B51...	Tank car tanks must be marked "DISPERSANT GAS" or "REFRIGERANT GAS" or with the proper shipping name.	N35....	When aluminum or aluminum alloy materials of construction are used, they must be resistant to corrosion.
		B52...	Notwithstanding the provisions of § 173.24b of this subchapter, non-reclosing pressure relief devices are authorized on DOT 57 portable tanks.	N36....	Aluminum or aluminum alloy materials of construction are permitted only for halogenated hydrocarbons that will not react with aluminum.
		B53...	Packagings shall be made of either aluminum or stainless steel.	N40....	For combination packagings, when metal inner packagings are permitted, only specification cylinders constructed of metals which are compatible with the hazardous material may be used.
				N41....	Metal (other than aluminum) materials of construction are not authorized for any part of a packaging which is normally in contact with the hazardous material.
				N42....	Metal (other than aluminum) materials of construction are not authorized for single packagings.
				N43....	Metal drums are permitted as single packagings only if constructed of nickel or monel.
				N44....	Only metal packagings are authorized.
				N45....	For combination packagings, only copper cartridges are permitted as inner packagings when the hazardous material is not in dispersion.
				N55....	For combination packagings, fiber drums (1G) only are permitted as outer packagings.
				N65....	Outage must be sufficient to prevent cylinders or spheres from becoming liquid full at 55°C (130°F). The vacant space (outage) may be charged with a nonflammable nonliquefied compressed gas if the pressure in the cylinder or sphere at 55°C (130°F) does not exceed 125% of the marked service pressure.
				N70....	For combination packagings, only plywood boxes (4D) and fiberboard boxes (4G) are permitted as outer packagings.
				N71....	Combination packagings consisting of inner glass packagings of not over 1.0 liter (1.06 quarts) capacity each or inner metal packagings of not over 5.0 liters (5.29 quarts) capacity each, placed in strong outer packagings, are authorized. Packagings are not subject to the requirements of Part 178 of this subchapter.
				N72....	Packagings must be examined by the Bureau of Explosives and approved by the Director, OHMT.
				N73....	Packagings consisting of outer wooden or fiberboard boxes with inner glass, metal or other strong containers; metal or fiber drums; kegs or barrels; or strong metal cans are authorized and need not conform to the requirements of Part 178 of this subchapter.

(4) "H" codes. These provisions apply only to transportation by highway:
 (Reserved.)

(5) "N" codes. These provisions apply only to non-bulk packagings:

Code	Special provisions
N1....	For combination packagings, if glass inner packagings (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in outer packagings.

Code	Special provisions	Code	Special provisions
N74....	Packages consisting of lightly closed inner containers of glass, earthenware, metal or polyethylene, capacity not over 0.5 kg (1.1 pounds) securely cushioned and packed in outer wooden barrels or wooden or fiberboard boxes, not over 15 kg (33.1 pounds) net weight, are authorized and need not conform to the requirements of Part 178 of this subchapter.	N78....	Packages consisting of inner glass, earthenware, or polyethylene or other nonfragile plastic bottles or jars not over 0.6 kg (1.1 pounds) capacity each, or metal cans not over five pounds capacity each, packed in outer wooden boxes, barrels or kegs, or fiberboard boxes are authorized and need not conform to the requirements of Part 178 of this subchapter. Net weight of contents in fiberboard boxes may not exceed 65 pounds (29.5 kg). Net weight of contents in wooden boxes, barrels or kegs may not exceed 100 pounds (45.4 kg).
N75....	Packages consisting of lightly closed inner packagings of glass, earthenware or metal, securely cushioned and packed in outer wooden barrels or wooden or fiberboard boxes, capacity not over 2.5 kg (5.51 pounds) net weight, are authorized and need not conform to the requirements of Part 178 of this subchapter.	N79....	Packages consisting of tightly closed metal inner packagings not over 0.6 kg (1.1 pounds) capacity each, packed in outer wooden or fiberboard boxes, or wooden barrels, are authorized and need not conform to the requirements of Part 178 of this subchapter. Net weight of contents may not exceed 15 kg (33.1 pounds).
N76....	For materials of not more than 25 percent active ingredient by weight, packages consisting of inner metal packagings not greater than 250 mL (8.5 fluid ounces) capacity each, packed in strong outer packagings together with sufficient absorbent material to completely absorb the liquid contents are authorized and need not conform to the requirements of Part 178 of this subchapter.	N80....	Packages consisting of one inner metal can, not over 2.5 kg (5.51 pounds) capacity, packed in an outer wooden or fiberboard box, or a wooden barrel, are authorized and need not conform to the requirements of Part 178 of this subchapter.
N77....	For materials of not more than two percent active ingredients by weight, packagings need not conform to the requirements of Part 178 of this subchapter, if liquid contents are absorbed in an inert material.		(6) "R" codes. These provisions apply only to transportation by rail: <i>(Reserved)</i> (7) "T" codes. These provisions apply only to transportation in IM portable tanks. They are divided into two

groupings, one of which appears as the IM Tank Table in paragraph (c)(7)(i) of this section, and the second of which imposes specific requirements and appears in paragraph (c)(7)(ii) of this section.

(i) **IM Tank Table.** Column 1 lists the code for the special provisions as specified in Column 7 of the § 172.101 Table. Column 2 specifies the IM tank type, either IM 101 (§§ 178.270 and 178.271 of this subchapter) or IM 102 (§§ 178.270 and 178.272 of this subchapter). Column 3 specifies the minimum test pressure, in bars (1 bar = 14.5 psig), at which the periodic hydrostatic testing required by § 173.32b of this subchapter must be conducted. Column 4 specifies either the section referenced for requirements for bottom openings or "Prohibited", which means bottom openings are prohibited. Column 5 specifies the section reference for requirements applicable to pressure relief devices.

IM TANK TABLE

Code	IM tank type	Minimum test pressure (bars)	Bottom outlets		Pressure relief devices
			(4)	(5)	
T1....	102	1.5	§ 173.32c(g)(1)		§ 178.270-11(a)(1),(2).
T2....	102	1.5	§ 173.32c(g)(2)		§ 178.270-11(a)(1),(2).
T7....	101	2.65	§ 173.32c(g)(1)		§ 178.270-11(a)(1),(2).
T8....	101	2.65	§ 173.32c(g)(2)		§ 178.270-11(a)(1),(2).
T9....	101	2.65	Prohibited		§ 178.270-11(a)(1),(2).
T11....	101	2.65	§ 173.32c(g)(2)		§ 178.270-11(a)(3).
T12....	101	2.65	Prohibited		§ 178.270-11(a)(3).
T13....	101	4	§ 173.32c(g)(1)		§ 178.270-11(a)(1),(2).
T14....	101	4	§ 173.32c(g)(2)		§ 178.270-11(a)(1),(2).
T15....	101	4	Prohibited		§ 178.270-11(a)(1),(2).
T16....	101	4	§ 173.32c(g)(1)		§ 178.270-11(a)(3).
T17....	101	4	§ 173.32c(g)(2)		§ 178.270-11(a)(3).
T18....	101	4	Prohibited		§ 178.270-11(a)(3).
T20....	101	6	§ 173.32c(g)(2)		§ 178.270-11(a)(1),(2).
T21....	101	6	Prohibited		§ 178.270-11(a)(1),(2).
T23....	101	6	§ 173.32c(g)(2)		§ 178.270-11(a)(3).
T24....	101	6	Prohibited		§ 178.270-11(a)(3).
T28....	101	10	Prohibited		§ 178.270-11(a)(1),(2).
T39....	101	10	Prohibited		§ 178.270-11(a)(3).

(ii) **IM Tank special provisions.** These provisions apply only to transportation in IM portable tanks:

Code	Special provisions
T25....	This hazardous material is not permitted for transport in IM portable tanks.
T26....	Each tank must have a minimum shell thickness of 6.35mm (0.250 inch) mild steel.
T27....	Each tank must have a minimum shell thickness of 8.0mm (0.315 inch) mild steel.
T29....	The lading shall be completely covered with nitrogen or an inert gas.

Code	Special provisions	Code	Special provisions
T30....	IM 102 portable tanks without bottom openings authorized for a hazardous material with a flash point of 32°F (0°C) or greater and a vapor pressure not greater than 9.5 psia (65.5 kPa) at 150°F (65.6°C).	T33....	Dry phosphorus is not permitted. For transport in a molten state, the tank shall be insulated in accordance with Note T38. Air shall be eliminated from the interior of the tank. The tank may be heated, however, interior heating coils are prohibited.
T31....	IM 102 portable tanks without bottom openings or with bottom openings conforming to § 173.32c(g)(2) of this subchapter are authorized for a hazardous material with a flash point of 32°F (0°C) or greater and a vapor pressure not greater than 9.5 psia (65.5 kPa) at 150°F (65.6°C).	T35....	Each tank shall be equipped with reclosing (spring loaded) pressure relief valves set to discharge at pressures determined according to the pressure characteristics of the organic peroxide lading.
T32....	Each tank must have a minimum shell thickness of 10.0mm (0.394 inch) mild steel with at least 5.0mm (0.197 inch) lead lining.	T36....	Each tank shall be equipped with pressure relief devices with sufficient venting capacity to prevent the tank from bursting.

Code	Special provisions
T37 ...	Tert-butyl hydroperoxide may not exceed 65% concentration in water, unless otherwise approved by the Director, OHMT. Each tank shall be made of aluminum of at least 99.5% purity, stainless steel or carbon steel. The material of construction must be compatible with the lading. The tank shall be equipped with pressure relief devices impervious to the lading. Aluminum tanks and carbon steel tanks shall be insulated in accordance with Note T38.
T38 ...	Each tank shall be thermally insulated by completely covering it with at least 100 millimeters (3.94 inches) of cork or other suitable insulation material of sufficient thickness that the overall thermal conductance is not more than 0.080 BTU per hour per square foot per degree Fahrenheit differential.
T40 ...	Each tank must have a minimum shell thickness of 10.0mm (0.394 inch) mild steel.
T41 ...	Each tank must have a minimum shell thickness of 12.0mm (0.472 inch) mild steel.
T42 ...	Transport in IM portable tanks is permitted only under conditions approved by the Director, OHMT.

(8) "W" codes. These provisions apply only to transportation by water:

Code	Special provisions
W41 ...	When offered for transportation by water, this material must be packaged in bales and be securely and tightly bound with rope, wire or similar means.

Subpart C—Shipping Papers

12. In § 172.200, paragraph (b) would be revised to read as follows:

§ 172.200 Applicability.

(b) This subpart does not apply to any material, other than a hazardous substance or waste, that is:

(1) Regulated only by air, water, or both (as indicated by the letter "A" or "W", or both, in Column 1 of the § 172.101 Table) when offered for transportation or transported in another mode of transport; or

(2) An ORM-D material, unless it is offered or intended for transportation, or transported, by aircraft.

§ 172.201 [Amended]

13. In § 172.201, in paragraph (a)(3), the word "subpart" would be changed to "subchapter" and paragraphs (a)(4)(i) and (a)(4)(ii) would be removed.

14. In § 172.202, paragraphs (a), (b), (c) and (d) would be revised and paragraph (f) would be added to read as follows:

§ 172.202 Description of hazardous material on shipping papers.

(a) The shipping description of a hazardous material on the shipping paper must include:

(1) The proper shipping name prescribed for the material in Column 2 of the § 172.101 Table;

(2) The hazard class prescribed for the material as shown in Column 3 of the § 172.101 Table;

(i) For Class 3, the description "Combustible liquid" must appear in

parentheses immediately following the hazard class if the material is classed, under § 173.120(b) of this subchapter, as a combustible liquid.

(ii) Class names, IMO class and division numbers or subsidiary hazard classes may be entered in parentheses following the numerical hazard class;

(3) The identification number prescribed for the material as shown in Column 4 of the § 172.101 Table;

(4) The packing group, if any, prescribed for the material in Column 5 of the § 172.101 Table preceded by the letters "PG"; and

(5) Except for empty packagings, the total quantity (by weight, volume or as otherwise appropriate) of the hazardous material covered by the description.

(b) Except as provided in this subpart, the basic description specified in paragraphs (a) (1), (2), (3) and (4) of this section must be shown in sequence with no additional information interspersed. For example: "Gasoline, 3, UN1203, PG II".

(c) The total quantity of the material covered by one description must appear before or after, or both before and after, the description required and authorized by this subpart. The type of packaging and destination marks may be entered in any appropriate manner before or after the basic description. Abbreviations may be used to express units of measurement and types of packagings.

(d) Technical and chemical group names may be entered in parentheses between the proper shipping name and hazard class. An appropriate modifier, such as "contains" or "containing," may be used. For example: "Flammable liquids, n.o.s. (contains Xylene and Benzene), 3, UN1993, PG II".

(f) *Technical names.* If the material is described by an n.o.s. entry in the § 172.101 Table, the technical name of the material shall be entered in parentheses immediately following the proper shipping name. For example, "Corrosive liquids, n.o.s. (Caprylic chloride), 8, UN1760, PG II". If the material is a mixture of two or more hazardous materials, the names of at least two components most predominately contributing to the hazard or hazards of the mixture shall be entered in parentheses. For example, "Flammable liquids, corrosive, n.o.s. (Methyl alcohol, Potassium hydroxide), 3, UN2924, PG II". The provisions of this paragraph do not apply:

(1) If the n.o.s. description for the material (other than a mixture of hazardous materials of different classes meeting the definitions of more than one

hazard class) contains the name of the chemical element or group which is primarily responsible for the material being included in the hazard class indicated. For example: "Mercury compounds, solid, n.o.s., 6.1, UN2025, PG II".

(2) If the n.o.s. description for the material (which is a mixture of hazardous materials of different classes meeting the definition of more than one hazard class) contains the name of the chemical element or group responsible for the material meeting the definition of one of these classes. In such cases, only the technical name of the component that is not appropriately identified in the n.o.s. description shall be entered in parentheses. For example: "Carbamate pesticides, liquid, flammable, toxic, n.o.s., flash point less than 23 °C (contains Xylene), 3(6.1), UN2758, PG II".

15. In § 172.203, paragraphs (i)(3) and (l) would be removed and paragraphs (l), (i)(2), (j) and (k)(4) would be revised to read as follows:

§ 172.203 Additional description requirements.

(c) *Hazardous substances.* (1) If the proper shipping name for a material that is a hazardous substance does not identify the constituents making it a hazardous substance, the name or names of such hazardous substance constituents as shown in the § 172.101 Table shall be entered in association with the basic description.

(2) The letters "RQ" shall be entered on the shipping paper either before or after, or both before and after, the basic description required by § 172.202 for each hazardous substance (see definition in § 171.8). For example: "RQ Allyl alcohol, 3, UN1098, PG I"; or "Benzonitrile, 6.1, UN2224, PG II, RQ".

(i) * * *

(2) The entry "skin corrosive only" must be included in association with the basic description to authorize "under deck" stowage for Corrosive liquids, n.o.s. and Corrosive solids, n.o.s. that meet only the corrosion to skin criteria of § 173.136(a) of this subchapter.

(j) *Dangerous when wet material.* The words "Dangerous when wet" shall be entered on the shipping paper in association with the basic description for a material which meets the definition of a dangerous when wet material in § 173.124(c) of this subchapter.

(k) * * *

(4) For Division 2.3 materials and for materials which meet the definition for Division 6.1, Packing Group I, and which

are toxic by inhalation under the criteria specified in § 173.133(a)(2) of this subchapter, the words "Poison-Inhalation Hazard" shall be entered on the shipping paper in association with the shipping description. However, the word "Poison" need not be repeated if it otherwise appears in the shipping description.

Subpart D—Marking

16. Section 172.301 would be revised to read as follows:

§ 172.301 General marking requirements for non-bulk packagings.

(a) *Proper shipping name and identification number.* Except as otherwise provided by this subchapter, each person who offers for transportation a hazardous material in a non-bulk packaging shall mark the package with the proper shipping name and identification number (preceded by "UN" or "NA" as appropriate) for the material as shown in the § 172.101 Table. The proper shipping name for a hazardous waste (as defined in § 171.8 of this subchapter) is not required to include the word "waste" if the package bears the EPA marking prescribed by 40 CFR 262.32.

(b) *Technical names.* (1) In addition to the marking required by paragraph (a) of this section, a package containing a hazardous material which is described by an n.o.s. entry in the § 172.101 Table, must be marked with the technical name of the material, in parentheses immediately following (or below) the proper shipping name. For example: "Corrosive liquids, n.o.s. (Caprylyl chloride), UN1760".

(2) If the material is a mixture of two or more hazardous materials, the names of at least two components most predominately contributing to the hazard or hazards of the mixture shall be entered in parentheses. For example: "Flammable liquids, corrosive, n.o.s. (Methanol, Potassium hydroxide), UN2924".

(3) The provisions of this paragraph do not apply:

(i) If the "n.o.s." description for the material (other than a mixture of hazardous materials of different classes meeting the definition of more than one hazard class) contains the name of the chemical element or group which is primarily responsible for the material being included in the hazard class indicated. For example: "Mercury compounds, solid, n.o.s., UN2025".

(ii) If the "n.o.s." description for the material (which is a mixture of hazardous materials of different classes meeting the definition of more than one

hazard class) contains the name of the chemical element or group responsible for the material meeting the definition of one of these classes. In such cases, only the technical name of the component that is not appropriately identified in the "n.o.s." description is required to be entered in parentheses. For example: "Carbamate pesticides, liquid, flammable, toxic, n.o.s. (Xylene), UN2758".

(c) *Exemption packagings.* The outside of each package authorized by an exemption must be plainly and durably marked "DOT-E" followed by the exemption number assigned.

(d) *Previously marked packagings.* A package which has been previously marked as required for the material it contains and on which the marking remains legible, need not be remarked. (For empty packagings, see § 173.29 of this subchapter.)

(e) *Marking exceptions.* Identification numbers are not required on packages which contain only the following materials:

- (1) Limited quantities as defined in § 171.8 of this subchapter;
- (2) ORM-D materials.

17. Section 172.302 would be revised to read as follows:

§ 172.302 General marking requirements for bulk packagings.

(a) *Identification numbers.* Except as otherwise provided in this subpart, no person may offer for transportation or transport a hazardous material in a bulk packaging unless the packaging is marked as required by § 172.332 with the identification number specified for the material in the § 172.101 Table—

(1) On each side and each end, if the packaging has a capacity of 1,000 gallons (3,785.4 liters) or more, or

(2) On two opposing sides, if the packaging has a capacity of less than 1,000 gallons (3,785.4 liters).

(b) *Size of markings.* Except as otherwise provided, markings required by this subpart on bulk packagings must have a width of at least 8.0mm (0.24 inch) and a height of—

- (1) 100mm (3.9 inches) for rail cars;
- (2) 75mm (3.0 inches) for cargo tanks, and

(3) 50mm (2.0 inches) for other bulk packages.

(c) *Exemption packagings.* The outside of each bulk package used under the terms of an exemption must be plainly and durably marked "DOT-E" followed by the exemption number assigned.

(d) *Technical names.* Each bulk packaging marked with a proper shipping name which contains the term

"n.o.s.", must be marked with the technical name of the hazardous material, in the manner prescribed in § 172.301(b).

(e) Each bulk packaging marked with a proper shipping name, common name or identification number as required by this subpart must remain marked when it is emptied unless it is—

(1) Sufficiently cleaned of residue and purged of vapors to remove any potential hazard; or

(2) Refilled, with a material requiring different markings or no markings, to such an extent that any residue remaining in the packaging is no longer hazardous.

(f) Specific requirements for marking portable tanks, cargo tanks, tank cars and multi-unit tank car tanks are prescribed in §§ 172.326, 172.328 and 172.330.

18. A new § 172.303 would be added to read as follows:

§ 172.303 Prohibited marking.

(a) No person may offer for transportation or transport a package which is marked with the proper shipping name or identification number of a hazardous material unless the package contains the identified hazardous material or its residue.

(b) This section does not apply to transportation of a package (or packaging) in a transport vehicle or freight container if the package (or packaging) is not visible during transportation and is loaded by the shipper and unloaded by the shipper or consignee.

19. Section 172.306 would be revised to read as follows:

§ 172.306 Consignee's or consignor's name and address.

Each person who offers for transportation a hazardous material in a non-bulk package shall mark that package with the name and address of the consignor or consignee except when the package is—

(a) Transported by highway only and will not be transferred from one motor carrier to another; or

(b) Part of a carload lot, truckload lot or freight container load, and the entire contents of the rail car, truck or freight container are shipped from one consignor to one consignee.

20. In § 172.308, paragraph (a)(3) would be added to read as follows:

§ 172.308 Authorized abbreviations.

(a) * * *

(3) Abbreviations which appear as authorized descriptions in Column 2 of

the § 172.101 Table are authorized. For example, "PCB", "2, 4-D", etc.

21. Section 172.312 would be revised to read as follows:

§ 172.312 Liquid hazardous materials in non-bulk packagings.

(a) Except as provided in this section, each non-bulk package having inner packagings containing liquid hazardous materials must be:

- (1) Packed with closures upward, and
- (2) Legibly marked with package orientation markings as specified in ISO Standard R780-1968 on two opposite vertical sides of the package with the arrows pointing in the correct upright direction.

(b) Except as otherwise prescribed in Part 173 of this subchapter, cylinders of liquefied compressed gas are not required to be marked "THIS SIDE UP" or "THIS END UP".

(c) Arrows for purposes other than indicating proper package orientation may not be displayed on a package containing a liquid hazardous material.

(d) Except when offered or intended for transportation by aircraft, packages containing flammable liquids in inner packagings of one liter or less prepared in accordance with § 173.150 (b) or (c) of this subchapter are excepted from the requirements of paragraph (a) of this section.

(e) When offered or intended for transportation by aircraft, packages containing flammable liquids in inner packagings of one liter or less prepared in accordance with § 173.150 (b) or (c) of this subchapter are excepted from the requirements of paragraph (a) of this section when packed with sufficient absorption material between the inner and outer packagings to completely absorb the liquid contents.

22. A new § 172.313 would be added to read as follows:

§ 172.313 Poisonous hazardous materials.

(a) For Division 2.3 materials and for poisonous liquids subject to the "Poison-Inhalation Hazard" shipping paper description of § 172.203(k)(4), the package containing the material shall be marked "Inhalation Hazard" in association with the required label(s) or placard(s). (See § 172.302(b) for size of markings on bulk packages.) Bulk packagings must be marked on two opposing sides.

(b) Each non-bulk plastic outer packaging used as a single or composite packaging for materials meeting the definition of Division 6.1 (in § 173.132 of this subchapter) shall be permanently marked, by embossment or other durable means, with the word

"POISON" in letters at least 6.3mm (0.25 inch) in height. Additional text or symbols related to hazard warning may be included in the marking. The marking shall be located within 150mm (5.9 inches) of the closure of the packaging.

23. In § 172.316, paragraph (a) and the beginning of the first sentence in paragraph (c) preceding the word "certification" would be revised to read as follows:

§ 172.316 Packagings containing material classed as ORM-D or ORM-E.

(a) Each non-bulk packaging containing a material classed as ORM-D or ORM-E must be marked on at least one side or end with the appropriate ORM designation immediately following or below the proper shipping name of the material. The appropriate ORM designation must be placed within a rectangle that is approximately 6.3mm (0.25 inch) larger on each side than the designation. The appropriate designation for each ORM must be:

(1) ORM-D-AIR for an ORM-D that is prepared for air shipment and packaged in accordance with the provisions of § 173.27 of this subchapter.

(2) ORM-D for an ORM-D other than as described in paragraph (a)(1) of this section.

(3) ORM-E for an ORM-E.

* * * * *

(c) The marking ORM-D or ORM-E is the * * *.

24. Section 172.324 would be revised to read as follows:

§ 172.324 Hazardous substances in non-bulk packagings.

(a) If the proper shipping name for a material that is a hazardous substance does not identify the constituents making it a hazardous substance, the name or names of the hazardous substance constituents as shown in the § 172.101 Table shall be entered in association with the proper shipping name on each non-bulk packaging.

(b) The letters "RQ" shall be displayed in association with the proper shipping name on a non-bulk packaging that contains a hazardous substance.

25. Section 172.326 would be revised to read as follows:

§ 172.326 Portable tanks.

(a) *Shipping name.* No person may offer for transportation or transport a portable tank containing a hazardous material unless it is legibly marked on two opposing sides with the proper shipping name specified for the material in § 172.101.

(b) [Reserved]

(c) *Owner's name.* The name of the owner or of the lessee, if applicable, must be displayed on a portable tank that contains a hazardous material.

(d) If the identification number marking required by § 172.302(a) is not visible, a transport vehicle or freight container used to transport a portable tank must be marked on each side and each end as required by § 172.332 with the identification number specified for the material in the § 172.101 Table.

26. Section 172.328 would be revised to read as follows:

§ 172.328 Cargo tanks.

(a) *Providing and affixing identification numbers.* Unless a cargo tank is already marked with the identification numbers required by this subpart, the identification numbers must be provided or affixed as follows:

(1) A person who offers a motor carrier a hazardous material for transportation in a cargo tank shall provide the motor carrier the identification numbers on placards or shall affix orange panels containing the required identification numbers, prior to or at the time the material is offered for transportation.

(2) A person who offers a cargo tank containing a hazardous material for transportation shall affix the required identification numbers on panels or placards prior to or at the time the cargo tank is offered for transportation.

(b) [Reserved]

(c) *Required markings; Gases.* Except for certain nurse tanks which must be marked as specified in § 173.315(m) of this subchapter, each cargo tank transporting a Class 2 material subject to this subchapter must be marked, in lettering no less than 50mm (1.97 inches), on each side and each end with—

(1) The proper shipping name specified for the gas in the § 172.101 Table, or

(2) An appropriate common name for the material such as "Refrigerant Gas".

(d) *QT/NQT markings.* Each MC 330 and MC 331 cargo tank must be marked near the specification plate, in letters no less than 50mm (1.97 inches) in height, with—

(1) "QT", if the cargo tank is constructed of quenched and tempered steel, or

(2) "NQT", if the cargo tank is constructed of other than quenched and tempered steel.

27. In § 172.330, the phrase "or § 172.102 [when authorized]" would be removed from paragraphs (c)(2) and (e). The phrase "or § 172.102" would be

removed from paragraph (c)(1), paragraph (f) would be removed and paragraphs (a) and (b) would be revised to read as follows:

§ 172.330 Tank cars and multi-unit tank car tanks.

(a) *Shipping name.* No person may offer for transportation or transport a hazardous material—

(1) In a tank car unless the tank car is marked on each side, when required by § 172.102 or Part 173 of this subchapter, with the proper shipping name specified for the material in the § 172.101 Table or with a common name authorized in this subchapter for the material such as "Refrigerant Gas".

(2) In a multi-unit tank car tank, unless the tank is marked on two opposing sides, in letters and numerals no less than 50mm (2.0 inches) high, with the proper shipping name specified for the material in the § 172.101 Table or with a common name authorized for the material in this subchapter.

(b) A motor vehicle or rail car used to transport a multi-unit tank car tank containing a hazardous material must be marked on each side and each end, as required by § 172.332, with the identification number specified for the material in the § 172.101 Table.

* * * * *

28. In § 172.332, paragraph (c)(3) would be revised to read as follows:

§ 172.332 Identification number markings.

* * * * *

(c) * * *

(3) An identification number may be displayed only on a placard corresponding to the primary hazard class of the hazardous material.

* * * * *

§ 172.334 [Amended]

29. In § 172.334 the phrase "POISON GAS", would be removed from paragraph (a), and the phrase "or § 172.102 (when authorized)" would be removed from paragraph (b).

Subpart E—Labeling

30. Section 172.400 would be revised to read as follows:

§ 172.400 General labeling requirements.

(a) Each person who offers for transportation or transports a hazardous material in any of the following packages or containment devices, shall label the package or containment device with labels specified for the material in the § 172.101 Table and in this subpart:

(1) A non-bulk package;

(2) A portable tank of less than 1000 gallons (3,785.4 liters) capacity;

(3) A DOT Specification 106 or 110 multi-unit tank car tank; and

(4) An overpack, freight container or unit load device, of no greater than 640 cubic feet (18.1 cubic meters) capacity, which contains a package for which labels are required.

(b) Labeling is required for a hazardous material which meets one or more hazard class definitions, in accordance with Column 6 of the § 172.101 Table and the following table:

Hazard class division reference (§)	Label name	Label design or section
1.1	EXPLOSIVE 1.1	172.411
1.2	EXPLOSIVE 1.2	172.411
1.3	EXPLOSIVE 1.3	172.411
1.4	EXPLOSIVE 1.4	172.411
1.5	EXPLOSIVE 1.5	172.411
2.1	FLAMMABLE GAS	172.417
2.2	NON-FLAMMABLE GAS.	172.415
2.3	POISON GAS	172.416
3 (flammable liquid)	FLAMMABLE LIQUID	172.419
(none)		
4.1	FLAMMABLE SOLID	172.420
4.2	SPONTANEOUSLY COMBUSTIBLE.	172.422
4.3	DANGEROUS WHEN WET	172.423
5.1	OXIDIZER	172.426
5.2	ORGANIC PEROXIDE	172.427
6.1 (Packing Groups I and II)	POISON	172.430
6.1 (Packing Group III)	KEEP AWAY FROM FOOD.	172.431
6.2 (International)	INFECTIOUS SUBSTANCE	172.432
6.2 (domestic)	ETOLOGIC AGENT	172.444
7 (see § 172.403)	RADIOACTIVE	172.436
7	WHITE-I.	
	RADIOACTIVE YELLOW-II.	172.438
	RADIOACTIVE YELLOW-III.	172.440
7 (empty packages, see § 173.427)	EMPTY	172.450
8	CORROSIVE	172.442
9	CLASS B	172.446
ORM-D	(None)	
ORM-E	(None)	

30. A new § 172.400a would be added to read as follows:

§ 172.400a Exceptions from labeling.

(a) Notwithstanding the provisions of § 172.400, a label is not required on—

(1) A cylinder containing a compressed gas that is—

(i) Not poisonous;
(ii) Carried by a private or contract motor carrier;

(iii) Not overpacked; and
(iv) Durably and legibly marked in accordance with CGA Pamphlet C-7, Appendix A.

(2) A package or unit of military explosives (including ammunition) shipped by or on behalf of the DOD when in—

(i) Freight containerload, carload or truckload shipments, if loaded and unloaded by the shipper or DOD; or

(ii) Unitized or palletized break-bulk shipments by cargo vessel under charter to DOD if at least one required label is displayed on each unitized or palletized load.

(3) A package containing a hazardous material other than ammunition that is—

(i) Loaded and unloaded under the supervision of DOD personnel, and
(ii) Escorted by DOD personnel in a separate vehicle.

(4) A compressed gas cylinder permanently mounted in or on a transport vehicle.

(5) A freight container, an aircraft unit load device or a portable tank, which—

(i) Is placarded in accordance with Subpart F of this part, or
(ii) Conforms to paragraph (a)(3) or (b)(3) of § 172.512.

(6) An overpack or unit load device in or on which each different required label on packages of hazardous materials is visible.

(7) A package of low specific activity radioactive material, when transported under § 173.425(b) of this subchapter.

(8) A package containing Division 1.4, Compatibility Group S, material.

(b) Notwithstanding the provisions of § 172.402 of this subpart, a subsidiary hazard label corresponding to Class 3, Packing Group III or Class 8, Packing Group III (that is, a FLAMMABLE or CORROSIVE label, respectively) is not required to be displayed on a package containing a multiple hazard material, unless the package is offered or intended for transportation by aircraft or vessel.

(c) Certain exceptions to labeling requirements are provided for small quantities and limited quantities in applicable sections in Part 173 of this subchapter.

§ 172.401 [Amended]

32. In § 172.401, paragraph (d) would be removed.

33. Section 172.402 would be revised to read as follows:

§ 172.402 Additional labeling requirements.

(a) Subsidiary hazard labels.

Notwithstanding the subsidiary labels specified in Column 6 of the § 172.101 Table, each package containing a material, other than a Class 2 material, meeting the definition of more than one hazard class shall be labeled with subsidiary hazard labels in accordance with the following table:

SUBSIDIARY HAZARD LABELS

Subsidiary hazard level (packing group)	Subsidiary hazard (class or division)						
	3	4.1	4.2	4.3	5.1	6.1	8
I.....	X	X	X	X	X	X	X
II.....	X	X	X	X	X	X	X
III.....	(¹)	(²)	X	X	(³)	(³)	(²)

- X Required for all modes.
- ¹ Required for transport by vessel only.
- ² Required for transport by aircraft only.
- ³ Not required.

(b) **CARGO AIRCRAFT ONLY label.** Each person who offers for transportation or transports by aircraft a package containing a hazardous material which is authorized on cargo aircraft only shall label the package with a CARGO AIRCRAFT ONLY label specified in § 172.448.

34. Section 172.405 would be revised to read as follows:

§ 172.405 Authorized label modifications.

(a) For Classes 2, 3, 4, 5, 6, or 8, text indicating a hazard (for example FLAMMABLE LIQUID) is not required on a label when—

(1) The label otherwise conforms to the provisions of this subpart, and

(2) The hazard class or division number is displayed in the lower corner of a label corresponding to the primary hazard class of the material.

(b) Except as provided in paragraph (a) of this section, class and division numbers are not required on labels for Classes 2, 3, 4, 5, 6, 7, or 8. Class and division numbers should not be displayed on subsidiary hazard labels.

35. Section 172.406 would be revised to read as follows:

§ 172.406 Placement of labels.

(a) **General.** (1) Except as provided in paragraphs (b) and (e) of this section, each label required by this subpart must—

(i) Be printed on or affixed to a surface (other than the bottom) of the package or containment device containing the hazardous material; and

(ii) Be located on the same surface of the package as the proper shipping name marking, if the package dimensions are adequate.

(2) Except as provided in paragraph (e) of this section, duplicate labeling is not required on a package or containment device (such as to satisfy redundant labeling requirements).

(b) **Exceptions.** A label may be printed on or placed on a securely affixed tag, or may be affixed by other suitable means to:

(1) A package that contains no radioactive material and which has dimensions less than those of the required label;

(2) A compressed gas cylinder; and

(3) A package which has such an irregular surface that a label cannot be satisfactorily affixed.

(c) **Placement of multiple labels.**

When primary and subsidiary hazard labels are required, they must be displayed next to each other. Placement conforms to this requirement if labels are within 150 mm (5.9 inches) of one another.

(d) Each label must be printed on or affixed to a background of contrasting color, or must have a dotted or solid line outer border.

(e) **Duplicate labeling.** When labeling is required, duplicate labels must be displayed on at least two sides or two ends (other than the bottom) of—

(1) Each non-bulk package or overpack having a volume of 64 cubic feet (1.8 cubic meters) or more;

(2) Each non-bulk package containing a radioactive material;

(3) Each DOT 106 or 110 multi-unit tank car tank. Labels must be displayed on each end;

(4) Each portable tank of less than 1000 gallons (3,785.4 liters) capacity; and

(5) Each freight container or aircraft unit load device having a volume of 64 cubic feet (1.8 cubic meters) or more, but less than 640 cubic feet (18.1 cubic meters). One of each required label must be displayed on or near the closure.

(f) **Obscured labels.** A label must be clearly visible and may not be obscured by markings or attachments.

36. Section 172.407 would be revised to read as follows:

§ 172.407 Label specifications.

(a) **Durability.** Each label, whether printed on or affixed to a package, must be durable and weather resistant. A label on a package must be able to withstand, without deterioration or a substantial change in color, a 30-day exposure to conditions incident to transportation that reasonably could be

expected to be encountered by the labeled package.

(b) **Design.** (1) Except for size and color, the printing, inner border, and symbol on each label must be as shown in §§ 172.411 through 172.448, as appropriate.

(2) The dotted line border shown on each label is not part of the label specification, except when used as an alternative for the solid line outer border to meet the requirements of § 172.406(d).

(c) **Size.** (1) Each diamond (square-on-point) label prescribed in this subpart must be at least 100 mm (3.9 inches) on each side with each side having a solid line inner border 5.0 to 6.3 mm (0.20 to 0.25 inches) from the edge.

(2) The CARGO AIRCRAFT ONLY label must be a rectangle measuring at least 110 mm (4.3 inches) in height by 120 mm (4.7 inches) in width. The word "DANGER" must be shown in letters measuring at least 12.7 mm (0.5 inches) in height.

(3) Except as otherwise provided in this subpart, the hazard class number, or division number, as appropriate, must be at least 6.3 mm (0.25 inches) and not greater than 12.7 mm (0.5 inches).

(4) When text indicating a hazard is displayed on a label, the label name must be shown in letters measuring at least 7.6 mm (0.30 inches) in height except that—

(i) For a SPONTANEOUSLY COMBUSTIBLE or DANGEROUS WHEN WET label, respectively, the words "Spontaneously" and "When Wet" must be shown in letters measuring at least 5.1 mm (0.2 inches) in height.

(ii) For a KEEP AWAY FROM FOOD label, the word "HARMFUL" must be shown in letters measuring at least 7.6 mm (0.3 inches) in height.

(5) The symbol on each label must be proportionate in size to that shown in the appropriate section of this subpart.

(d) **Color.** (1) The background color on each label must be as prescribed in §§ 172.411 through 172.448, as appropriate.

(2) The symbol, text, numbers, and border must be shown in black on a label except that—

(i) White may be used on a label with a one color background of green, red or blue; and

(ii) White must be used for the text and class number for the CORROSIVE label.

(3) Black and any color on a label must be able to withstand, without substantial change, a 72-hour fadeometer test (for a description of equipment designed for this purpose, see ASTM G 23-59 (1975) or G 26-70).

(4) A color on a label, upon visual examination, must fall within the color tolerances displayed on the appropriate Label and Placard Color Tolerance Chart.

(i) A set of six charts, dated January 1973, for comparison with labels and placards surfaced with paint, lacquer, enamel, plastic or other opaque coatings, or ink, may be purchased from the Office of Hazardous Materials Transportation, U.S. Department of Transportation, Washington, DC 20590, for \$5.50.

(ii) A set of six charts, dated January 1974, for comparison with labels and placards surfaced with ink, may be similarly purchased for \$12.50.

(iii) Both sets of charts may be inspected in Room 8420, Nassif Building, 400 7th Street SW., Washington, DC 20590, or any of the offices of the Federal Highway Administration listed at 49 CFR 390.40.

(iv) The technical specifications for each chart are set forth in Appendix A to this part.

(5) The specified label color must extend to the edge of the label in the area designated on each label except the CORROSIVE, RADIOACTIVE YELLOW-II AND RADIOACTIVE YELLOW-III labels on which the color must extend only to the inner border.

(e) *Form identification.* A label may contain form identification information, including the name of its maker, provided that information is printed outside the solid line inner border in no larger than 10-point type.

(f) *Exceptions.* A label conforming to specifications in the UN Recommendations may be used in place of a corresponding label which conforms to the requirements of this subpart.

37. Section 172.411 would be revised to read as follows:

§ 172.411 EXPLOSIVE 1.1, 1.2, 1.3, 1.4 and 1.5 labels.

(a) Except for size and color, the EXPLOSIVE 1.1, EXPLOSIVE 1.2 and EXPLOSIVE 1.3 labels must be as follows:



EXPLOSIVE 1.5:



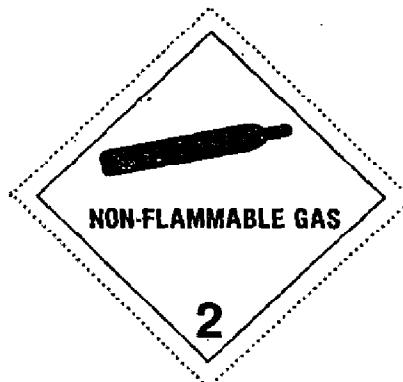
(d) In addition to complying with § 172.407, the background color on the EXPLOSIVE 1.4 and EXPLOSIVE 1.5 labels must be orange. The "****" shall be replaced with the appropriate compatibility group. The compatibility group letter must be shown as a capitalized Roman letter measuring at least 12.7 mm (0.5 inch) in height. Division numerals must measure at least 30mm (1.2 inches) in height and at least 5mm (0.2 inches) in width.

38. Section 172.415 would be revised to read as follows:

§ 172.415 NON-FLAMMABLE GAS label.

(a) Except for size and color, the NON-FLAMMABLE GAS label must be as follows:

EXPLOSIVE 1.4:

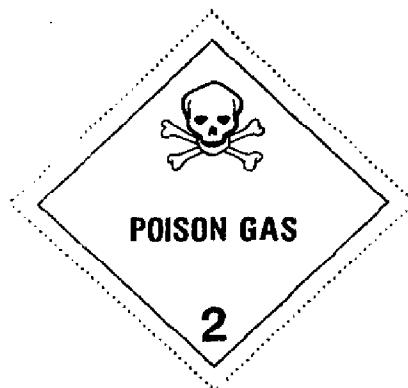


(b) In addition to complying with § 172.407, the background color on the NON-FLAMMABLE GAS label must be green.

39. Section 172.416 would be revised to read as follows:

§ 172.416 POISON GAS label.

(a) Except for size and color, the POISON GAS label must be as follows:

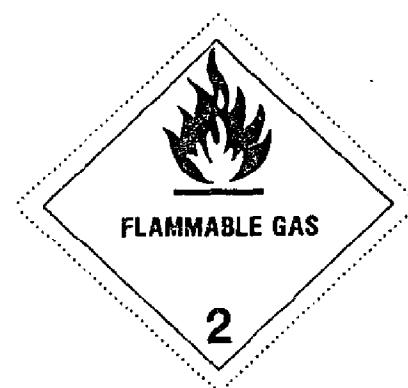


(b) In addition to complying with § 172.407, the background on the POISON GAS label must be white.

40. Section 172.417 would be revised to read as follows:

§ 172.417 FLAMMABLE GAS label.

(a) Except for size and color, the FLAMMABLE GAS label must be as follows:

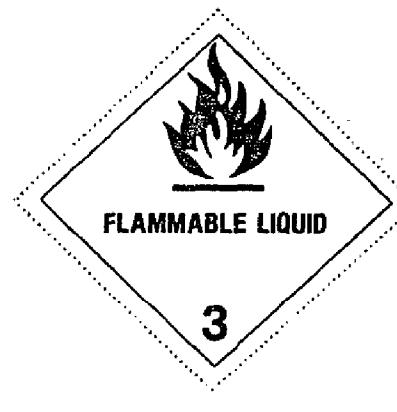


(b) In addition to complying with § 172.407, the background color on the FLAMMABLE GAS label must be red.

41. Section 172.419 would be revised to read as follows:

§ 172.419 FLAMMABLE LIQUID label.

(a) Except for size and color the FLAMMABLE LIQUID label must be as follows:



(b) In addition to complying with § 172.407, the background color on the FLAMMABLE LIQUID label must be red.

42. Section 172.420 would be revised to read as follows:

§ 172.420 FLAMMABLE SOLID label.

(a) Except for size and color, the FLAMMABLE SOLID label must be as follows:



(b) In addition to complying with § 172.407, the background on the FLAMMABLE SOLID label must be white with vertical red stripes equally spaced on each side of a red stripe placed in the center of the label. The red vertical stripes must be spaced so that, visually, they appear equal in width to the white spaces between them. The symbol (flame) and text (when used) must be overprinted. The text "FLAMMABLE SOLID" may be placed in a white rectangle.

43. Section 172.422 would be revised to read as follows:

§ 172.422 SPONTANEOUSLY COMBUSTIBLE label.

(a) Except for size and color, the SPONTANEOUSLY COMBUSTIBLE label must be as follows:



(b) In addition to complying with § 172.407, the background color on the lower half of the SPONTANEOUSLY COMBUSTIBLE label must be red and the upper half must be white.

44. Section 172.423 would be revised to read as follows:

§ 172.423 DANGEROUS WHEN WET label.

(a) Except for size and color, the DANGEROUS WHEN WET label must be as follows:



(b) In addition to complying with § 172.407, the background color on the DANGEROUS WHEN WET label must be blue.

45. Section 172.426 would be revised to read as follows:

§ 172.426 OXIDIZER label.

(a) Except for size and color, the OXIDIZER label must be as follows:



(b) In addition to complying with § 172.407, the background color on the OXIDIZER label must be yellow.

46. Section 172.427 would be revised to read as follows:

§ 172.427 ORGANIC PEROXIDE label.

(a) Except for size and color, the ORGANIC PEROXIDE label must be as follows:



(b) In addition to complying with § 172.407, the background color on the ORGANIC PEROXIDE label must be yellow.

47. Section 172.430 would be revised as follows:

§ 172.430 POISON label.

(a) Except for size and color, the POISON label must be as follows:



(b) In addition to complying with § 172.407, the background on the POISON label must be white.

48. A new § 172.431 would be added to read as follows:

§ 172.431 KEEP AWAY FROM FOOD label.

(a) Except for size and color, the KEEP AWAY FROM FOOD label must be as follows:



(b) In addition to complying with § 172.407, the background on the KEEP AWAY FROM FOOD label must be white.

49. Section 172.432 would be revised to read as follows:

§ 172.432 INFECTIOUS SUBSTANCE label.

(a) Except for size and color, the INFECTIOUS SUBSTANCE label must be as follows:



(b) In addition to complying with § 172.407, the background on the INFECTIOUS SUBSTANCE label must be white.

50. Section 172.436 would be revised to read as follows:

§ 172.436 RADIOACTIVE WHITE-I label.

(a) Except for size and color, the RADIOACTIVE WHITE-I label must be as follows:



(b) In addition to complying with § 172.407, the background on the RADIOACTIVE WHITE-I label must be white. The printing and symbol must be black, except for the "I" which must be red.

51. Section 172.438 would be revised to read as follows:

§ 172.438 RADIOACTIVE YELLOW-II label.

(a) Except for size and color, the RADIOACTIVE YELLOW-II must be as follows:



§ 172.448 CARGO AIRCRAFT ONLY label.
 (a) Except for size and color, the CARGO AIRCRAFT ONLY label must be as follows:



(b) In addition to complying with § 172.407, the background color on the RADIOACTIVE YELLOW-II label must be yellow in the top half and white in the lower half. The printing and symbol must be black, except for the "II" which must be red.

52. Section 172.440 would be revised to read as follows:

§ 172.440 RADIOACTIVE YELLOW-III label.
 (a) Except for size and color, the RADIOACTIVE YELLOW-III label must be as follows:



(b) In addition to complying with § 172.407, the background color on the RADIOACTIVE YELLOW-III label must be yellow in the top half and white in the lower half. The printing and symbol must be black, except for the "III" which must be red.

53. Section 172.442 would be revised to read as follows:

§ 172.442 CORROSIVE label.

(a) Except for size and color, the CORROSIVE label must be as follows:

(b) In addition to complying with § 172.407, the background on the CORROSIVE label must be white in the top half and black in the lower half.

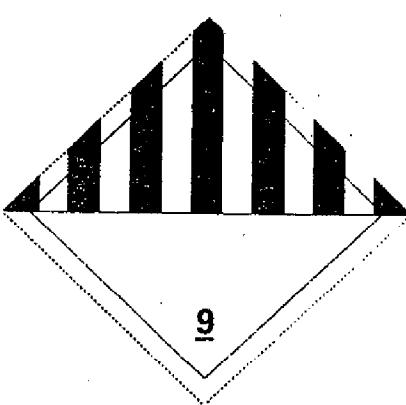
§ 172.444 [Amended]

54. In § 172.444, paragraphs (b) and (c) would be removed.

55. Section 172.446 would be added to read as follows:

§ 172.446 CLASS 9 label.

(a) Except for size and color, the CLASS 9 (miscellaneous hazardous materials) label must be as follows:



(b) In addition to complying with § 172.407, the background on the CLASS 9 label must be white with seven black vertical stripes on the top half. The black vertical stripes must be spaced so that, visually, they appear equal in width to the six white spaces between them. The lower half of the label must be white with the class number 9 underlined and centered at the bottom.

56. Section 172.448 would be revised to read as follows:

(b) The CARGO AIRCRAFT ONLY label must be black on an orange background.

Subpart F—Placarding

57. Section 172.500 would be revised to read as follows:

§ 172.500 Applicability of placarding requirements.

(a) Each person who offers for transportation or transports any hazardous material subject to this subchapter shall comply with the applicable placarding requirements of this subpart.

(b) This subpart does not apply to—
 (1) Infectious substances;
 (2) Hazardous materials classed as ORM-D or E or Class 9;

(3) Hazardous materials authorized by this subchapter to be offered for transportation as Limited Quantities when identified as such on shipping papers in accordance with § 172.203(b);

(4) Hazardous materials which are packaged as small quantities under the provisions of § 173.4 of this subchapter; and

(5) Combustible liquids in non-bulk packagings.

58. Section 172.502 would be revised to read as follows:

§ 172.502 Prohibited and permissive placarding.

(a) **Prohibited placarding.** Except as provided in paragraph (c) of this section, no person may affix or display on a bulk packaging, freight container, unit load device, motor vehicle or rail car any placard described in this subpart unless—

(1) The material being offered or transported is a hazardous material, and

(2) The placard represents a hazard of the hazardous material being offered or transported.

(b) No person may affix or display any sign or other device on a bulk packaging, freight container, unit load device, motor vehicle or rail car, that by its color, design, shape or content could be confused with any placard prescribed in this subpart.

(c) *Exceptions.* The restrictions in paragraphs (a) and (b) of this section do not apply to a bulk packaging, freight container, unit load device, motor vehicle or rail car which is placarded in conformance with the TDG Regulations, the IMDG Code or the UN Recommendations.

(d) The restrictions of paragraph (b) of this section do not apply to the display of an identification number on a white square-on-point configuration in accordance with § 172.336(b).

(e) *Permissive placarding.* Placards may be displayed for a hazardous material in accordance with this subpart even when not required if—

(1) The material and placards conform to the requirements of paragraph (a) of this section, and

(2) Neither an identification number, hazard class nor division number is displayed on a placard corresponding to a subsidiary hazard of the hazardous material.

59. Section 172.504 would be revised to read as follows:

§ 172.504 General placarding requirements.

(a) *General.* Except as otherwise provided in this subchapter, each bulk packaging, freight container, unit load device, motor vehicle or rail car containing any quantity of a hazardous material must be placarded on each side and each end with the type of placards specified in Tables 1 and 2 of this section and in accordance with other placarding requirements of this subpart, including the specifications for the placards named in the tables and described in detail in §§ 172.519 through 172.558.

(b) *DANGEROUS placard.* A freight container, unit load device, motor vehicle or rail car which contains non-bulk packagings with two or more categories of hazardous materials that require different placards specified in Table 2 may be placarded with DANGEROUS placards instead of the separate placarding specified for each of the materials in Table 2. However, when 5,000 pounds (2,267.9 Kg) or more of one category of material is loaded therein at one loading facility, the placard

specified in Table 2 for that category must be applied.

(c) *Exception for less than 1,000 pounds.* For non-bulk packagings, when the gross weight of all hazardous materials covered by Table 2 is less than 1000 pounds (453.6 Kg), no placard is required on a freight container, unit load device, motor vehicle, or rail car for the Table 2 materials. This paragraph does not apply to transportation by aircraft or vessel, or to transport vehicles, freight containers and unit load devices subject to § 172.505.

(d) *Exception for empty non-bulk packages.* A non-bulk packaging that contains only the residue of a hazardous material covered by Table 2 of paragraph (e) of this section need not be included in determining placarding requirements.

(e) *Placarding tables.* Placards are specified for hazardous materials in accordance with the following tables:

TABLE 1

Category of material (hazard class or division number and additional description, as appropriate)	Placard name	Placard design section reference(s)
1.1.....	EXPLOSIVES 1.1.....	172.522
1.2.....	EXPLOSIVES 1.2.....	172.522
1.3.....	EXPLOSIVES 1.3.....	172.522
2.3 (poisonous gas).....	POISON GAS.....	172.540
4.3.....	DANGEROUS WHEN WET. POISON.....	172.548
6.1 (PG I inhalation hazard only). 7 (Radioactive Yellow III label only).	RADIOACTIVE.....	172.556

TABLE 2

Category of material (hazard class or division number and additional description, as appropriate)	Placard name	Placard design section reference (s)
1.4.....	EXPLOSIVES 1.4.....	172.523
1.5.....	EXPLOSIVES 1.5.....	172.524
2.1 (flammable gas).....	FLAMMABLE GAS.....	172.532
2.2 (nonflammable gas).....	NON-FLAMMABLE GAS.....	172.528
3 (flammable liquid).....	FLAMMABLE.....	172.542
3 (combustible liquid).....	COMBUSTIBLE.....	172.544
4.1.....	FLAMMABLE SOLID.....	172.546
4.2.....	SPONTANEOUSLY COMBUSTIBLE.....	172.547
5.1.....	OXIDIZER.....	172.550
5.2.....	ORGANIC PEROXIDE.....	172.552
6.1 (PG I or II, other than PG I inhalation hazard). 6.1 (PG III).....	POISON..... (None).....	172.554
6.2.....	(None).....	
6.....	CORROSIVE.....	172.558
9.....	(None).....	
ORM-D.....	(None).....	
ORM-E.....	(None).....	

(f) Additional placarding exceptions.

(1) An EXPLOSIVES 1.2 placard is not required for Division 1.2 explosives on a motor vehicle, rail car, freight container or unit load device which contains Division 1.1 explosives, and is placarded with EXPLOSIVES 1.1 placards, as required.

(2) A FLAMMABLE placard may be used in place of a COMBUSTIBLE placard on a cargo tank, a portable tank or a compartmented tank car which contains both flammable and combustible liquids.

(3) A NON-FLAMMABLE GAS placard is not required on a motor vehicle which contains non-flammable gas if the motor vehicle also contains flammable gas and it is placarded with FLAMMABLE GAS placards, as required.

(4) An EXPLOSIVES 1.4, 1.5 or OXIDIZER placard is not required for Division 1.4, 1.5 or 5.1 materials on a freight container, unit load device, motor vehicle or rail car which also contains Division 1.1 or 1.2 explosives and is placarded with EXPLOSIVES 1.1 or 1.2 placards, as required.

(5) For transportation by motor vehicle or rail car only, an OXIDIZER placard is not required for Division 5.1 materials on a motor vehicle, rail car or freight container which also contains Division 1.5 explosives and is placarded with EXPLOSIVES 1.5 placards, as required.

(6) An EXPLOSIVES 1.4 placard is not required for Division 1.4, Compatibility Group S, materials.

60. Section 172.505 would be revised to read as follows:

§ 172.505 Multiple placarding.

(a) Each transport vehicle, portable tank, freight container or unit load device that contains a poisonous material subject to the "Poison-Inhalation Hazard" shipping description of § 172.203(k)(4) shall be placarded with POISON or POISON GAS placards, as appropriate, on each side and each end, in addition to the placards required by § 172.504. This requirement does not apply to non-bulk packages having primary receptacles of one liter (1.06 quarts) or less. Duplication of the POISON or POISON GAS placard is not required.

(b) Each transport vehicle, portable tank or freight container that contains 1,000 pounds (453.6 kg) or more gross weight of fissile or low specific activity uranium hexafluoride shall be placarded with RADIOACTIVE and CORROSIVE placards on each side and each end.

(c) Each transport vehicle, portable tank, freight container or unit load device that contains a material which has a subsidiary hazard of being dangerous when wet, as defined in § 173.124, shall be placarded with DANGEROUS WHEN WET placards, on each side and each end, in addition to the placards required by § 172.504.

§ 172.508 [Amended]

61. In paragraph (a) of § 172.508, the phrase "§ 172.502 and 172.504 as these sections pertain to placarding the rail car" would be revised to read "this subpart."

62. In § 172.510 paragraph (b) would be removed and reserved and paragraph (a) would be revised to read as follows:

§ 172.510 Special placarding provisions: Rail.

(a) *Square background required.* (1) Each EXPLOSIVES 1.1 and EXPLOSIVES 1.2 placard affixed to a rail car must be placed on a square background as described in § 172.527.

(2) Each POISON, POISON-RESIDUE, POISON GAS, AND POISON GAS-RESIDUE placard affixed to a rail car containing a material which meets Division 2.3 or 6.1, Packing Group I, criteria for inhalation toxicity (see § 173.133 of this subchapter) must be placed on a square background as described in § 172.527.

(b) [Reserved]

§ 172.512 [Amended]

63. In § 172.512 the following changes would be made:

a. In paragraph (a)(1), the section reference "§ 172.504(c)(1)" would be revised to read "§ 172.504(c)".

b. In paragraph (a)(2), the phrase "paragraphs (c)(1) and (c)(2)" would be revised to read "paragraph (c)".

c. In paragraphs (b)(1) and (b)(2), the section references "§ 172.406(e)(3)" and "§ 172.406(e)", respectively, would be revised to read "Subpart E of this part, including § 172.406(e)."

64. Section 172.514 would be revised to read as follows:

§ 172.514 Bulk packagings other than tank cars.

(a) Each person who offers for transportation a bulk packaging, other than a tank car, which contains a hazardous material shall affix the placards specified for the material in §§ 172.504 and 172.505. However, a portable tank having a capacity of less than 1,000 gallons (3,785.4 liters)—

(1) May be placarded on only two opposite sides; or

(2) May be labeled instead of placarded, in accordance with Subpart E of this part.

(b) Each bulk packaging, other than a tank car, that is required to be placarded when it contains a hazardous material, must remain placarded when it is emptied, unless it is—

(1) Sufficiently cleaned of residue and purged of vapors to remove any potential hazard; or

(2) Refilled, with a material requiring different placards or no placards, to such an extent that any residue remaining in the packaging is no longer hazardous.

65. In § 172.516, the introductory text of paragraph (c) would be revised and subparagraph (c)(7) would be added to read as follows:

§ 172.516 Visibility and display of placards.

(c) Each placard on a transport vehicle, bulk packaging, freight container or aircraft unit load device must—

(7) Be affixed to a background of contrasting color, or must have a dotted or solid line outer border which contrasts with the background color.

66. Section 172.519 would be revised to read as follows:

§ 172.519 General specifications for placards.

(a) *Strength and durability.* Placards must conform to the following:

(1) A placard may be made of any plastic, metal or other material capable of withstanding, without deterioration or a substantial reduction in effectiveness, a 30-day exposure to open weather conditions.

(2) Each placard must be able to pass a 60 p.s.i. Mullen test.

(3) A placard made of tagboard must be at least equal to that designated commercially as white tagboard. Tagboard must have a weight of at least 175 pounds (90.7 kg) per ream of 24 by 36-inch (61.0 by 91.4 cm) sheets, waterproofing materials included.

(4) Reflective or retroreflective materials may be used on a placard if the prescribed colors, strength and durability are maintained.

(b) *Design.* (1) Except as provided in § 172.332, each placard must be as described in this subpart, and except for size and color, the printing, inner border and symbol must be as shown in §§ 172.521 through 172.558, as appropriate.

(2) The dotted line border shown on each placard is not part of the placard specification. However, a dotted or solid line outer border may be used when needed to indicate the full size of a placard that is part of a larger format or is on a background of a non-contrasting color.

(3) For Classes 2, 3, 4, 5, 6 or 8, text indicating a hazard (for example, "FLAMMABLE") is not required.

(4) For a placard corresponding to the primary hazard class of a material, the

hazard class or division number must be displayed in the lower corner of the placard. However, no hazard class or division number may be displayed on a placard corresponding to a subsidiary hazard of the material.

(c) *Size.* (1) Each placard prescribed in this subpart must measure 273mm (10.75 inches) on each side and must have a solid line inner border 12.7mm (0.5 inches) from each edge.

(2) Except as otherwise provided in this subpart, the hazard class or division number, as appropriate, must be shown in numerals measuring at least 41.0mm (1.62 inches) in height.

(3) Except as otherwise provided in this subpart, when text indicating a hazard is displayed on a placard, the printing must be in letters measuring at least 45.0mm (1.77 inches) in height.

(d) *Color.* (1) The background color, symbol, text, numerals and inner border on a placard must be as specified in §§ 172.521 through 172.558, as appropriate.

(2) Black and any color on a placard must be able to withstand, without substantial change—

(i) A 72-hour fadeometer test (for a description of equipment designed for this purpose, see ASTM G 23-69 (1975) or ASTM G 26-70); and

(ii) A 30-day exposure to open weather.

(3) Upon visual examination, a color on a placard must fall within the color tolerances displayed on the appropriate Office of Hazardous Materials Label and Placard Color Tolerance Chart (see § 172.407(d)(4)).

(4) The placard color must extend to the inner border and may extend to the edge of the placard in the area designated on each placard except the color on the CORROSIVE and RADIOACTIVE placards (black and yellow, respectively) must extend only to the inner border.

(e) *Form identification.* A placard may contain form identification information, including the name of its maker, provided that information is printed outside of the solid line inner border in no larger than 10-point type.

(f) *Exceptions.* A placard conforming to specifications in the UN Recommendations or the TDG Regulations may be used in place of a corresponding placard which conforms to the requirements of this subpart.

67. Section 172.522 would be revised to read as follows:

§ 172.522 EXPLOSIVES 1.1, EXPLOSIVES 1.2 and EXPLOSIVES 1.3 placards.

(a) Except for size and color, the EXPLOSIVES 1.1, EXPLOSIVES 1.2 and

EXPLOSIVES 1.3 placards must be as follows:



§ 172.524 EXPLOSIVES 1.5 placard.

(a) Except for size and color, the EXPLOSIVES 1.5 placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the EXPLOSIVES 1.1, EXPLOSIVES 1.2 and EXPLOSIVES 1.3 placards must be orange. The "*" shall be replaced with the appropriate division number. The symbol, text, numerals and inner border must be black.

68. Section 172.523 would be revised to read as follows:

§ 172.523 EXPLOSIVES 1.4 placard.

(a) Except for size and color, the EXPLOSIVES 1.4 placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the EXPLOSIVES 1.4 placard must be orange. The division numeral, 1.4, must measure at least 63.5mm (2.5 inches) in height. The text, numerals and inner border must be black.

69. Section 172.524 would be revised to read as follows:

§ 172.530 [Removed]

71. Section 172.530 would be removed.

72. Section 172.532 would be revised to read as follows:

§ 172.532 FLAMMABLE GAS placard.

(a) Except for size and color, the FLAMMABLE GAS placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the EXPLOSIVES 1.5 placard must be orange. The division numeral, 1.5, must measure at least 63.5mm (2.5 inches) in height. The text, numerals and inner border must be black.

70. Section 172.528 would be revised to read as follows:

§ 172.528 NON-FLAMMABLE GAS placard.

(a) Except for size and color, the NON-FLAMMABLE GAS placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the NON-FLAMMABLE GAS placard must be green. The letters in both words must be at least 38.1mm (1.5 inches) high. The symbol, text, class number and inner border must be white.

(b) In addition to complying with § 172.519, the background color on the FLAMMABLE GAS placard must be red. The symbol, text, class number and inner border must be white.

§ 172.536 [Removed]

73. Section 172.536 would be removed.

74. Section 172.540 would be revised to read as follows:

§ 172.540 POISON GAS placard.

(a) Except for size and color, the POISON GAS placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the

POISON GAS placard must be white. The symbol, text, class number and inner border must be black.

75. Section 172.542 would be revised to read as follows:

§ 172.542 FLAMMABLE placard.

(a) Except for size and color, the FLAMMABLE placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the FLAMMABLE placard must be red. The symbol, text, class number and inner border must be white.

(c) The word "GASOLINE" may be used in place of the word "FLAMMABLE" on a placard that is displayed on a cargo tank or a portable tank being used to transport gasoline by highway. The word "GASOLINE" must be shown in white.

76. Section 172.544 would be revised to read as follows:

§ 172.544 COMBUSTIBLE placard.

(a) Except for size and color, the COMBUSTIBLE placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the COMBUSTIBLE placard must be red. The symbol, text, class number and inner border must be white. On a COMBUSTIBLE placard with a white bottom as prescribed by § 172.332(c)(4), the class number must be red or black.

(c) The words "FUEL OIL" may be used in place of the word "COMBUSTIBLE" on a placard that is displayed on a cargo tank or portable tank being used to transport by highway, fuel oil that is not classed as a flammable liquid. The words "FUEL OIL" must be shown in white.

77. Section 172.546 would be revised to read as follows:

§ 172.546 FLAMMABLE SOLID placard.

(a) Except for size and color, the FLAMMABLE SOLID placard must be as follows:



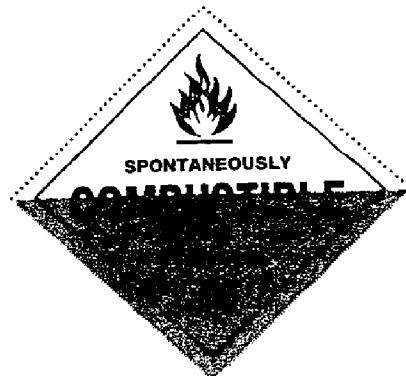
(b) In addition to complying with § 172.519, the background on the FLAMMABLE SOLID placard must be

white with seven vertical red stripes. The stripes must be equally spaced, with one red stripe placed in the center of the label. Each red stripe and each white space between two red stripes must be 25.4mm (1.0 inches) wide. The letters in the word "SOLID" must be at least 38.1mm (1.5 inches) high. The symbol, text, class number and inner border must be black.

78. A new § 172.547 would be added to read as follows:

§ 172.547 SPONTANEOUSLY COMBUSTIBLE placard.

(a) Except for size and color, the SPONTANEOUSLY COMBUSTIBLE placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the SPONTANEOUSLY COMBUSTIBLE placard must be red in the lower half and white in upper half. The letters in the word "SPONTANEOUSLY" must be at least 25.0 mm (0.98 inches) high. The symbol, text, class number and inner border must be black.

79. Section 172.548 would be revised to read as follows:

§ 172.548 DANGEROUS WHEN WET placard.

(a) Except for size and color, the DANGEROUS WHEN WET placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the DANGEROUS WHEN WET placard must be blue. The letters in the words "WHEN WET" must be at least 25.4mm (1.0 inches) high. The symbol, text, class number and inner border must be white.

80. Section 172.550 would be revised to read as follows:

§ 172.550 OXIDIZER placard.

(a) Except for size and color, the OXIDIZER placard must be as follows:



(b) In addition to complying with § 172.519, the background color on the OXIDIZER placard must be yellow. The symbol, text, division number and inner border must be black.

81. Section 172.552 would be revised to read as follows:

§ 172.552 ORGANIC PEROXIDE placard.

(a) Except for size and color, the ORGANIC PEROXIDE placard must be as follows:

(b) In addition to complying with § 172.519, the background color on the POISON placard must be white. The symbol, text, class number and inner border must be black.

83. Section 172.556 would be revised to read as follows:

§ 172.556 RADIOACTIVE placard.

(a) Except for size and color, the RADIOACTIVE placard must be as follows:

(b) In addition to complying with § 172.519, the background color on the CORROSIVE placard must be black in the lower portion with a white triangle in the upper portion. The base of the white triangle must be 38.1mm ± 5mm (1.5 inches) above the placard horizontal center line. The text and class number must be white. The symbol and inner border must be black.

Appendix B—[Reserved]

85. Appendix B to Part 172 would be removed and reserved.

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

86. The authority citation for Part 173 would continue to read as follows:

Authority: 49 U.S.C. 1803, 1804, 1805, 1806, 1807, 1808; 49 CFR Part 1, unless otherwise noted.

87. In § 173.1, paragraph (d) would be added as follows:

§ 173.1 Purpose and scope.

(d) In general, the Hazardous Materials Regulations (HMR) contained in this subchapter are based on the Recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods and are consistent with international regulations issued by the International Civil Aviation Organization and the International Maritime Organization. However, the HMR are not consistent in all respects with the UN Recommendations, the ICAO Technical Instructions or the IMDG Code, and compliance with the HMR will not guarantee acceptance by regulatory bodies outside of the United States.

88. Section 173.2 would be revised as follows:

§ 173.2 Hazardous materials classes and index to hazard class definitions.

The hazard class of a hazardous material is indicated either by its class (or division) number, its class name, or by the letters "ORM-D" or "ORM-E". The following table lists class numbers, division numbers, class or division names and those sections of this subchapter which contain definitions for classifying hazardous materials, including forbidden materials.

Class number	Division number (if any)	Name of class or division	49 CFR reference for definitions
None		Forbidden materials	173.21
None		Forbidden explosives	173.53
1	1.1	Explosives (with a mass explosion hazard).	173.50
1	1.2	Explosives (with a projection hazard).	173.50
1	1.3	Explosives (with predominately a fire hazard).	173.50
1	1.4	Explosives (with no significant blast hazard).	173.50
1	1.5	Very insensitive explosives; blasting agents.	173.50
2	2.1	Flammable gas	173.115
2	2.2	Non-flammable compressed gas.	173.115
2	2.3	Poisonous gas	173.115
3		Flammable and combustible liquids.	173.120
4	4.1	Flammable solids	173.124
4	4.2	Spontaneously combustible materials.	173.124
4	4.3	Dangerous when wet materials.	173.124
5	5.1	Oxidizers	173.128
5	5.2	Organic peroxides	173.128
6	6.1	Poisonous materials	173.132
6	6.1	Irritants	173.381
6	6.2	Etiologic or infectious substances.	173.134
7		Radioactive materials	173.403
8		Corrosive materials	173.136
9		Miscellaneous hazardous materials.	173.140
None		Other regulated materials: ORM-D and ORM-E.	173.144

89. Section 173.2a would be added to read as follows:

§ 173.2a Classification of a material having more than one hazard.

(a) *Materials not subject to precedence of hazard ranking.* (1) A material with more than one hazard which is specifically identified and classed in the § 172.101 Table is not subject to the precedence of hazard ranking of this section (unless that material does not pose the hazard of the class assigned in the § 172.101 Table, and is not preceded, in Column 1 of the Table, with a "+" symbol).

(2) *Class 1.* An explosive shall be

classed and approved in accordance with Subpart C of this part.

(3) *Division 5.2.* A material meeting the definition in § 173.128 for organic peroxide shall be classed in Division 5.2.

(4) *Division 6.2.* A material meeting the definition in § 173.134 for etiologic agent shall be classed in Division 6.2.

(5) *Class 7-limited quantities.* A limited quantity radioactive material that meets the definitions for more than one hazard class shall be classed in accordance with § 173.421-2.

(b) *Precedence of hazard.* Except as otherwise provided in this section, a material meeting the definitions for more than one hazard class as defined in this part shall be classed according to the highest applicable hazard class of the following hazard classes, which are listed in descending order of hazard:

(1) Class 7 (radioactive materials, except limited quantities).

(2) Division 2.3 (poisonous gases).

(3) Division 2.1 (flammable gases).

(4) Division 2.2 (nonflammable gases).

(5) Class 3 (flammable liquids and combustible liquids) or 8 (corrosive materials) or Division 4.1 (flammable solids), 4.2 (spontaneously combustible materials), 4.3 (dangerous when wet materials), 5.1 (oxidizers) or 6.1 (poisonous liquids or solids). Materials meeting more than one of these hazards shall be assigned a hazard class in accordance with paragraph (c) of this section.

(6) Class 9 (miscellaneous hazardous materials).

(7) ORM-E (hazardous wastes and hazardous substances).

(c) *Precedence of hazard table.* A material meeting the definitions for more than one hazard class for Classes 3 and 8 and Divisions 4.1, 4.2, 4.3, 5.1 and 6.1 shall be assigned a hazard class based on the following table:

PRECEDENCE OF HAZARD TABLE**[Hazard Class and Packing Group]**

Hazard Class and packing group	4.2	4.3	5.1 * I	5.1 * II	5.1 * III	6.1 I(d)	6.1 I(o)	6.1 II	6.1 III	8 I(I)	8 I(s)	8 II(I)	8 II(s)	8 III(I)	8 III(s)	
3 I			3	3	3	6.1	3	3	3	3	3	(1)	3	(1)	3	(1)
3 II			3	3	3	6.1	3	3	3	3	3	(1)	3	(1)	3	(1)
3 III			3	3	3	6.1	6.1	6.1	6.1	(2)3	8	(1)	8	(1)	3	(1)
4.1 I *	4.2	4.3	4.1	4.1	4.1	6.1	6.1	4.1	4.1	4.1	(1)	4.1	(1)	4.1	(1)	4.1
4.1 II **	4.2	4.3	4.1	4.1	4.1	6.1	6.1	6.1	4.1	4.1	(1)	4.1	(1)	4.1	(1)	4.1
4.1 III **	4.2	4.3	4.1	4.1	4.1	6.1	6.1	6.1	6.1	4.1	(1)	8	(1)	8	(1)	4.1
4.2 I	4.2	4.2	4.2	4.2	4.2	6.1	6.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
4.2 II	4.2	4.2	4.2	4.2	4.2	6.1	6.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
4.2 III	4.3	5.1	5.1	4.2	6.1	6.1	6.1	6.1	4.2	8	8	8	8	8	4.2	4.2
4.3 I			5.1	4.3	4.3	6.1	6.1	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4.3 II			5.1	4.3	4.3	6.1	6.1	4.3	4.3	4.3	8	8	4.3	4.3	4.3	4.3

PRECEDENCE OF HAZARD TABLE—Continued

[Hazard Class and Packing Group]

Hazard Class and packing group	4.2	4.3	5.1 [*]	5.1 [*]	5.1 [*]	6.1 (f)	6.1 (d)	6.1 (o)	6.1 II	6.1 III	8 I(I)	8 I(s)	8 II(I)	8 II(s)	8 III(I)	8 III(s)
4.3 III			5.1	5.1	4.3	6.1	6.1	6.1	6.1	4.3	8	8	8	8	4.3	4.3
5.1 I *						6.1	6.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
5.1 II *						6.1	6.1	5.1	5.1	5.1	8	8	5.1	5.1	5.1	5.1
5.1 III *						6.1	6.1	6.1	6.1	5.1	8	8	8	5.1	5.1	5.1
6.1 (f)												6.1	6.1	6.1	6.1	6.1
6.1 I(d)												8	6.1	6.1	6.1	6.1
6.1 I(o)												8	6.1	6.1	6.1	6.1
6.1 II(i)												8	6.1	6.1	6.1	6.1
6.1 II(d)												8	6.1	6.1	6.1	6.1
6.1 II(o)												8	8	8	6.1	6.1
6.1 III												8	8	8	8	8

(i) Inhalation Toxicity

(d) Dermal Toxicity

(o) Oral Toxicity

(I) Liquid

(s) Solid

¹ An impossible combination.² For pesticides only, 6.1.³ There are no established criteria for determining packing groups for liquids in Division 5.1. Degree of hazard for these materials should be assessed by analogy with similar materials identified in the § 172.101 Table, allocating the materials to Packing Group I (high hazard), Packing Group II (medium hazard) or Packing Group III (low hazard).⁴ Materials in Division 4.1 other than self-reactive materials and water wetted explosives.

90. Section 173.3 would be revised to read as follows:

§ 173.3 Packaging and exceptions.

(a) The packaging of hazardous materials for transportation by air, highway, rail, or water must be as specified in this part. Methods of manufacture, packing, and storage of hazardous materials, that affect safety in transportation, must be open to inspection by a duly authorized representative of the initial carrier or of the Department. Methods of manufacture and related functions necessary for completion of a DOT specification or UN standard packaging must be open to inspection by a representative of the Department.

(b) The regulations setting forth packaging requirements for a specific material apply to all modes of transportation unless otherwise stated, or unless exceptions from packaging requirements are authorized.

(c) *Salvage drums.* Packages of hazardous materials that are damaged or found leaking and hazardous materials that have spilled or leaked may be placed in a metal or plastic removable head salvage drum that is compatible with the lading and shipped for repackaging or disposal under the following conditions:

(1) The drum must be a UN 1A2, 1B2, 1N2 or 1H2 drum marked for the performance standard commensurate with the packing group of the material it is to contain. Maximum capacity of the

drum may not exceed 450 liters (118.88 gallons).

(2) Each drum shall be provided when necessary with sufficient cushioning and absorption material to prevent excessive movement of the damaged package and to absorb all free liquid. All cushioning and absorbent material used in the drum must be compatible with the hazardous material.

(3) Each drum shall be marked with the proper shipping name of the material inside the defective packaging and the name and address of the consignee. In addition, the drum shall be marked "Salvage Drum".

(4) Each drum shall be labeled as prescribed for the respective material.

(5) The shipper shall prepare shipping papers in accordance with Subpart C of Part 172 of this subchapter.

(6) The overpack requirement of § 173.25 does not apply to drums used in accordance with this paragraph.

91. Section 173.3a would be revised to read as follows:

§ 173.3a Poisonous liquids which are toxic by inhalation.

Notwithstanding the requirements of Part 172 and Part 173 of this subchapter, any hazardous material that meets the definition of Class 6, Division 6.1, Packing Group I, for inhalation toxicity (See §§ 173.132 and 173.133) shall be packaged in non-bulk packagings in accordance with § 173.226 or § 173.227, as appropriate, or in bulk packagings in accordance with § 173.244 and shall be described on shipping papers, marked,

labeled, and placarded in accordance with §§ 172.203(k)(4), 172.313(a), 172.402(a)(5) and 172.505(a), of this subchapter respectively.

92. Section 173.4 would be revised to read as follows:

§ 173.4 Exceptions for small quantities.

(a) Small quantities of Class 3, Division 4.1, Division 5.1, Division 5.2, Class 8, and Division 6.1 materials, and Class 7 materials that also meet the definition of one or more of these hazard classes, are not subject to any other requirements of this subchapter if:

(1) The maximum quantity of material per inner receptacle is limited to:

(i) Thirty (30) milliliters for authorized liquids, other than Division 6.1, Packing Group I, materials;

(ii) Thirty (30) grams for authorized solids, other than Division 6.1, Packing Group I, materials;

(iii) One (1) gram for authorized materials classed as Division 6.1, Packing Group I; and

(iv) An activity level not exceeding that specified in §§ 173.421, 173.422 or 173.424, as appropriate, for a package containing a Class 7 material.

(2) With the exception of temperature sensing devices, each inner receptacle:

(i) Is not liquid-full at 55 °C (131 °F), and

(ii) Is constructed of plastic having a minimum thickness of no less than 0.008-inch (0.2 millimeters), or earthenware, glass, or metal;

(3) Each inner receptacle with a removable closure has its closure held securely in place with wire, tape, or other positive means;

(4) Unless equivalent cushioning and absorbent material surrounds the inside packaging, each inner receptacle is securely packed in an inside packaging with cushioning and absorbent material that:

(i) Will not react chemically with the material, and

(ii) Is capable of absorbing the entire contents (if a liquid) of the receptacle;

(5) The inside packaging is securely packed in a strong outside packaging;

(6) The completed package, as demonstrated by prototype testing, is capable of sustaining—

(i) Each of the following free drops made from a height of 1.8 meters (5.91 feet) directly onto a solid unyielding surface without breakage or leakage from any inner receptacle and without a substantial reduction in the effectiveness of the package:

(A) One drop flat on bottom;

(B) One drop flat on top;

(C) One drop flat on the long side;

(D) One drop flat on the short side;

and

(E) One drop on a corner at the junction of three intersecting edges; and

(ii) A compressive load in pounds, determined by multiplying by two the maximum horizontal cross section of the package (in square inches) in the position in which it would normally be transported, without a substantial reduction in effectiveness; the load shall be applied continuously during a period of 24 hours, uniformly against the top and bottom of the package which is in the position in which it is intended to be normally transported.

Note.—Each of the above tests may be performed on a different, but identical, package; i.e., all tests need not be performed on the same package.

(7) Placement of the material in the package or packing different materials in the package does not result in a violation of § 173.21;

(8) The gross weight of the completed package does not exceed 65 pounds (29.5 kg);

(9) The shipper certifies conformance with this section by marking the outside of the package with the statement: "This package conforms to conditions and limitations specified in 49 CFR 173.4";

(10) The package is not opened or otherwise altered until it is no longer in commerce; and

(11) The package, unless specifically approved by the Director, OHMT, does not contain a material assigned any of the following identification numbers

associated with the hazardous materials description in the § 172.101 Table:

1092	1491	2626
1131	1504	2813
1259	1749	2845
1380	1798	2924
1397	1831	2925
1419	1873	9191
1422	2031	9193
1432	2032	
1433	2495	

(b) A package containing a Class 7 material also must conform with the requirements of § 173.421 (a) through (e), or § 173.422 (a) through (f), as appropriate. After May 2, 1987, a package containing a Class 7 material may not be offered for transportation aboard a passenger-carrying aircraft unless that material is intended for use in, or incident to, research, medical diagnosis or treatment.

§ 173.5 [Amended]

93. In § 173.5, quantity references would be revised as follows:

a. In paragraph (a)(2), the reference to "1 gallon" would be changed to "4 liters (4.2 quarts)" and the reference to "25 pounds" would be changed to "15 kg (33.1 pounds)".

b. In paragraph (a)(3) the reference to "100 pounds" would be changed to "50 kg (110.2 pounds)".

c. In paragraph (b) the reference to "55 gallons" would be changed to "220 L (58.1 gallons)".

§ 173.6 [Removed]

94. Section 173.6 would be removed.

§ 173.7 [Amended]

95. In § 173.7, in paragraphs (b) and (d), the word "radioactive" would be changed to "Class 7".

96. Section 173.9 would be revised as follows:

§ 173.9 Cars, truck bodies or trailers containing lading which has been fumigated or treated with Class 3, Division 2.1, 2.3, or 6.1 materials.

(a) Delivery for transportation by railcarrier of any rail car, freight container, truck body, or trailer containing lading which has been fumigated or treated with Class 3 or Division 2.1 materials is prohibited until 48 hours have elapsed after such fumigation or treatment, or until the railcar, freight container, truck body or trailer has been ventilated so as to remove any danger of fire or explosion due to the presence of flammable vapors.

(b) Any railcar, freight container, truck body or trailer containing lading which has been fumigated or treated with Division 6.1 or Division 2.3 materials, such as carbolic acid, liquid

or solid, chloropicrin, hydrocyanic acid, methyl bromide, etc., must be placarded on each door or near thereto with the FUMIGANT placard prescribed in paragraph (c) of this section.

(c) *FUMIGANT placard*. The FUMIGANT placard must consist of red letters on a white background which is at least 25 cm (9.8 inches) wide and 20 cm (7.9 inches) high. It must contain the name of the fumigant and other text as follows:

DANGER

The lading of this car has been
FUMIGATED or
TREATED
with

(Name of poisonous liquid, solid, or gas)

BEFORE UNLOADING, open both doors and DO NOT ENTER until car is free of gas. REMOVE ALL POISONOUS MATERIAL before release of empty car.

(d) See § 174.615 of this subchapter for requirements for cleaning fumigated cars.

§ 173.10 [Amended]

97. In § 173.10, terms would be revised as follows:

a. In paragraph (a) the term "flammable gas" would be changed to "Division 2.1 material" and the term "flammable liquid" would be changed to "Class 3 material".

b. In paragraph (b) the term "compressed gas" would be changed to "Class 2 material".

c. In paragraph (e), the phrase "Flammable liquids and flammable gases" would be changed to "Class 3 and Division 2.1 materials."

98. Section 173.12 would be revised to read as follows:

§ 173.12 Exceptions for shipment of waste materials.

(a) *Open head drums*. If a hazardous material that is a hazardous waste is required by this subchapter to be shipped in a closed head drum (i.e., a drum with a 7.0 cm (2.75 inches) or less bung opening) and the hazardous waste contains solids or semisolids that make its placement in a closed head drum impracticable, an equivalent (except for closure) open head drum may be used for the hazardous waste.

(b) *Lab packs*. Waste materials classed as Class or Division 3, 4.1, 4.2, 4.3, 5.1, 6.1, 8, 9 or ORM-E are excepted

from the specification packaging requirements of this subchapter if packaged in combination packagings in accordance with this paragraph and transported for disposal or recovery by private or contract motor carrier by highway only. In addition, a generic description from the § 172.101 Table may be used in place of specific chemical names, when two or more chemically compatible waste materials in the same hazard class are packaged in the same outside packaging. Additional packaging requirements are as follows:

(1) The outer packaging must be a 1A2 or 1B2 metal drum, a 1D plywood drum, a 1G fiber drum or a 1H2 plastic drum;

(2) The inner packagings must be either glass not exceeding 4 liters (4.2 quarts) rated capacity or metal or plastic not exceeding 20 liters (21.1 quarts) rated capacity;

(3) Each outer packaging may contain only one class of hazardous material;

(4) Inner packagings containing liquid must be surrounded by a chemically compatible absorbent material in sufficient quantity to absorb the total liquid contents;

(5) Gross weight of the complete package may not exceed 205 kg (451.9 lbs); and

(6) Materials meeting the definition of Division 6.1, Packing Group I, or Division 4.2, Packing Group I, may not be packaged or described under the provisions of this paragraph.

(c) *Reuse of packagings.* A previously used packaging may be reused for the shipment of hazardous waste to designated facilities, not subject to the reconditioning and reuse provisions contained in § 173.28 and Part 178 of this subchapter, under the following conditions:

(1) Except as authorized by this paragraph, the waste must be packaged in accordance with this part and offered for transportation in accordance with the requirements of this subchapter.

(2) Transportation is performed by highway only.

(3) A package is not offered for transportation less than 24 hours after it is finally closed for transportation, and each package is inspected for leakage and is found to be free from leaks immediately prior to being offered for transportation.

(4) Each package is loaded by the shipper and unloaded by the consignee, unless the motor carrier is a private or contract carrier.

(5) The packaging may be used only once under this paragraph and may not be used again for shipment of hazardous materials except in accordance with § 173.28.

Subpart B—Preparation of Hazardous Materials for Transportation

99. Section 173.21 would be revised as follows:

§ 173.21 Forbidden materials and packages.

Unless otherwise provided in this subchapter, the offering for transportation or transportation of the following is forbidden:

(a) Materials that are designated "Forbidden" in Column 3 of the § 172.101 Table.

(b) Forbidden explosives as defined in § 173.51 of this part.

(c) Electrical devices which are likely to create sparks or generate a dangerous quantity of heat, unless packaged in a manner which precludes such an occurrence.

(d) For carriage by aircraft, any package which has a magnetic field of more than 0.00525 gauss measured at 15 feet (4.6 meters) from any surface of the package.

(e) A material in the same packaging, freight container, or overpack with another material, the mixing of which is likely to cause a dangerous evolution of heat, flammable or poisonous gases or vapors, or to produce corrosive materials.

(f) A package containing a material which is likely to decompose or polymerize at a temperature of 130 °F (54.4 °C) or less with an evolution of a dangerous quantity of heat or gas unless stabilized or inhibited in a manner that will preclude such evolution, subject to the following:

(1) For organic peroxides, the decomposition temperature of 130 °F (54.4 °C) does not apply if the controlled temperature requirements specified in Chapter 11 of the UN Recommendations are applied to determine when refrigeration is required, and refrigeration is approved as required by paragraph (f)(3) of this section.

(2) The determination of whether a material is forbidden under this paragraph may be made by using the Self Accelerating Decomposition Temperature (SADT) Test published by the Organic Peroxide Producers Safety Division (OPPSD).

(3) Refrigeration may be used as a means of stabilization only when approved by the Director, OHMT. For status of approvals previously issued by the Bureau of Explosives, see § 171.19 of this subchapter.

(g) Packages which give off a flammable gas or vapor, released from a material not otherwise subject to this subchapter, likely to create a flammable mixture with air in a transport vehicle.

(h) Packages containing materials (other than those classed as explosive) which will detonate in a fire.

(1) For purposes of this paragraph, "detonate" means an explosion in which the shock wave travels through the material at a speed greater than the speed of sound.

(2) When tests are required to evaluate the performance of a package under the provisions of this paragraph, the testing must be done or approved by one of the agencies specified in § 173.86.

(i) Except as noted in paragraph (i)(1) of this section, a package containing a cigarette lighter, or other similar device, equipped with an ignition element and containing fuel.

(1) A cigarette lighter or similar device subject to this paragraph may be shipped if the design of the device and its packaging has been examined by the Bureau of Explosives and specifically approved by the Director, OHMT. The examination of cigarette lighters and similar devices containing gaseous fuel will include scrutiny for compliance with § 173.308 of this part. For the status of approvals previously issued by the Bureau of Explosives, see § 171.19 of this subchapter.

100. In § 173.23, paragraph (a) would be revised as follows:

§ 173.23 Previously authorized packaging.

(a) When the regulations specify a packaging with a specification marking prefix of "DOT," a packaging marked prior to January 1, 1970, with the prefix of "ICC" may be used in its place if the packaging otherwise conforms to applicable specification requirements.

* * * * *

101. Section 173.24 would be revised as follows:

§ 173.24 General requirements for packagings and packages.

(a) *Applicability.* Except as otherwise provided in this subchapter, the provisions of this section apply to—

(1) Bulk and non-bulk packagings;

(2) New packagings and packagings which are reused; and

(3) Specification and non-specification packagings.

(b) Each package used for the shipment of hazardous materials under this subchapter shall be designed, constructed, maintained, filled, its contents so limited, and closed, so that under conditions normally incident to transportation—

(1) Except as otherwise provided in this subchapter, there will be no release of hazardous materials to the environment;

(2) The effectiveness of the packaging will not be significantly reduced; and
 (3) There will be no mixture of gases or vapors in the package which could, through any credible spontaneous increase of heat or pressure, significantly reduce the effectiveness of the packaging.

(c) *Authorized packagings.* A packaging is authorized for a hazardous material only if—

(1) The packaging is prescribed or permitted for the hazardous material in a packaging section specified for that material in Column 8 of the § 172.101 Table and conforms to applicable requirements in the special provisions of Column 7 of the § 172.101 Table and, for specification packagings (including UN standard packagings), the specification requirements in Parts 178 and 179 of this subchapter; or

(2) The packaging is permitted under and conforms to provisions contained in §§ 171.11, 171.12, 171.12a, 173.3, 173.4, 173.5, 173.6, 173.7, or 176.11 of this subchapter.

(d) *DOT specification and UN standard packagings.* For DOT specification packagings (including UN standard packagings), conformance to the applicable specifications in Parts 178 and 179 of this subchapter is required in all details. For performance-oriented packagings covered by Subpart L of Part 178 of this subchapter, each packaging must be capable of meeting the performance test requirements specified in Subpart M of Part 178 of this subchapter for the applicable packing group shown in Column 5 of the § 172.101 Table.

(e) *Compatibility.* (1) Even though certain packagings are specified in this Part, it is, nevertheless, the responsibility of the person offering a hazardous material for transportation to ensure that such packagings are compatible with their lading. This particularly applies to corrosivity, permeability, softening, premature aging and embrittlement.

(2) Packaging materials and contents must be such that there will be no significant chemical or galvanic reaction between the materials and contents of the package.

(3) *Plastic packagings and receptacles.* (i) Plastic used in packagings and receptacles must be of a type compatible with the lading and may not be permeable to an extent that a hazardous condition is likely to occur during transportation, handling or refilling.

(ii) Each plastic packaging or receptacle which is used for liquid hazardous materials must be capable of withstanding without failure the

procedure specified in Appendix B of this part ("Procedure for Testing Chemical Compatibility and Rate of Permeation in Plastic Packagings and Receptacles"). The maximum rate of permeation of hazardous lading through or into the plastic packaging or receptacles may not exceed 0.5 percent for materials meeting the definition of a Division 6.1 material according to § 173.132 and 2.0 percent for other hazardous materials, when subjected to a temperature no lower than—

- (A) 18 °C (64 °F) for 180 days in accordance with Test Method 1;
- (B) 50 °C (122 °F) for 28 days in accordance with Test Method 2; or
- (C) 60 °C (140 °F) for 14 days in accordance with Test Method 3.

(iii) Alternative procedures or rates of permeation are permitted if they yield a level of safety equivalent to or greater than that provided by paragraph (e)(3)(ii) of this section and are specifically approved by the Director, OHMT.

(4) *Mixed contents.* (i) Hazardous materials may not be packed or mixed together in the same outer packaging with other hazardous or nonhazardous materials if such materials are capable of reacting dangerously with each other and causing—

- (A) Combustion or dangerous evolution of heat;
- (B) Evolution of flammable, poisonous or asphyxiant gases;
- (C) Formation of corrosive materials; or
- (D) Formation of unstable materials.

(f) *Closures.* (1) Closures on packagings shall be so designed and closed that under conditions (including the effects of temperature and vibration) normally incident to transportation—

(i) Except as provided in paragraph (g) of this section, there is no release of hazardous materials to the environment from the opening to which the closure is applied; and

(ii) The closure is secure and leakproof.

(2) Except as otherwise provided in this subchapter, a closure (including gaskets or other closure components, if any) used on a specification packaging must conform to all applicable requirements of the specification.

(g) *Venting.* Venting of packagings, to reduce internal pressure which may develop by the evolution of gas from the contents, is permitted only when—

(1) Transportation by aircraft is not involved;

(2) Except as otherwise provided in this subchapter, the evolved gases are not toxic, flammable or asphyxiant gases;

(3) The packaging is designed so as to preclude a significant release of hazardous materials from the receptacle; and

(4) For shipments in bulk packagings, venting is authorized for the specific hazardous material by a special provision in the § 172.101 Table or by the applicable bulk packaging specification in Part 178 of this subchapter.

(h) *Outage and filling limits—(1) General.* When filling packagings and receptacles for liquids, sufficient ullage (outage) must be left to ensure that neither leakage nor permanent distortion of the packaging or receptacle will occur as a result of an expansion of the liquid caused by temperatures likely to be encountered during transportation. Liquids must not completely fill a receptacle at a temperature of 55 °C (131 °F) or less.

(2) *Compressed gases and cryogenic liquids.* Filling limits for compressed gases and cryogenic liquids are specified in §§ 173.301 through 173.306 for cylinders and §§ 173.314 through 173.319 for bulk packagings.

(i) *Air transportation.* Packages offered or intended for transportation by aircraft must conform to the general requirements for transportation by aircraft in § 173.27.

102. Section 173.24a would be added, as follows:

§ 173.24a Additional general requirements for non-bulk packagings and packages.

(a) *Packaging design—(1) Closures.* A closure device must be so designed that it is unlikely that it can be incorrectly or incompletely closed, and must be such that it may be checked easily to determine that it is completely closed. Except as provided in § 172.312 of this subchapter, a combination packaging containing liquid hazardous materials must be packed so that closures on inner receptacles are upright.

(2) *Friction.* The nature and thickness of the outer packaging must be such that friction during transportation is not likely to generate an amount of heat sufficient to alter dangerously the chemical stability of the contents.

(3) *Securing and cushioning.* Inner packagings of combination packagings must be so packed; secured and cushioned to prevent their breakage or leakage and to control their movement within the outer packaging under conditions normally incident to transportation. Cushioning material must not be capable of reacting dangerously with the contents of the inner packagings.

(4) *Metallic devices.* Nails, staples and other metallic devices shall not protrude into the interior of the outer packaging in such a manner as to be likely to damage inner packagings or receptacles.

(5) *Vibration.* Each non-bulk package must be capable of withstanding, without rupture or leakage, the vibration test procedure specified in Appendix C of this Part ("Procedure for Base Level Vibration Testing").

(b) *Non-bulk packaging filling limits.* (1) A single or composite non-bulk packaging may be filled with a liquid hazardous material only when the specific gravity of the material does not exceed that marked on the packaging, or a specific gravity of 1.2 if not marked.

(2) A single or composite non-bulk packaging may not be filled with a solid hazardous material to a gross mass greater than the maximum gross mass marked on the packaging.

(3) Packagings tested as prescribed in § 178.605 of this subchapter and marked with the hydrostatic test pressure as prescribed in § 178.503(a)(5) of this subchapter may be used for liquids only when the vapor pressure of the liquid conforms to one of the following:

(i) The vapor pressure must be such that the total pressure in the packaging (i.e., the vapor pressure of the liquid plus the partial pressure of air or other inert gases, less 100 kPa (14.5 psi)) at 55 °C (131 °F), determined on the basis of a maximum degree of filling in accordance with subparagraph (1) of this paragraph and a filling temperature of 15 °C (59 °F), will not exceed two-thirds of the marked test pressure;

(ii) The vapor pressure at 50 °C (122 °F) must be less than four-sevenths of the sum of the marked test pressure plus 100 kPa (14.5 psi); or

(iii) The vapor pressure at 55 °C (131 °F) must be less than two-thirds of the sum of the marked test pressure plus 100 kPa (14.5 psi).

(c) *Mixed contents.* (1) An outer non-bulk packaging may contain more than one hazardous material only when—

(i) The inner and outer packaging used for each hazardous material conforms to the relevant packaging sections of this part applicable to each of the hazardous materials;

(ii) The package as prepared for shipment meets the performance tests prescribed in Part 178 for the packing group indicating the highest order of hazard for the hazardous materials contained in the package;

(iii) Corrosive materials in bottles are further packed in securely closed inner receptacles before packing in outer packagings; and

(iv) For transportation by aircraft, the total net quantity does not exceed the lowest permitted maximum net quantity per package as shown in Column 9a or 9b, as appropriate, of the § 172.101 Table. The permitted maximum net quantity must be calculated in kilograms if a package contains both a liquid and a solid.

(2) A packaging containing inner packagings of Division 6.2 materials may not contain other hazardous materials, except dry ice.

103. Section 173.24b would be added, as follows:

§ 173.24b Additional general requirements for bulk packagings and packages.

(a) *Pressure relief devices on bulk packagings.* Except when installed in series with a pressure relief valve, a non-reclosing pressure relief device may not be used on a bulk packaging containing a hazardous material that is flammable or poisonous or both.

(b) *Outage and filling limits.* (1) *Tank car and multi-unit tank car tank filling limits.* (i) Hazardous materials may not be loaded into the dome of a tank car.

(ii) If the dome of the tank car does not provide sufficient outage, then vacant space must be left in the shell to make up the required outage.

(iii) Liquids must be so loaded in tank cars and multi-unit tank car tanks that the outage is at least one percent of the total capacity of the tank and dome at the reference temperature of 115 °F (46.1 °C) for uninsulated tanks and 105 °F (40.6 °C) for insulated tanks. Tanks must not be liquid full at 131 °F (55 °C).

(2) *Cargo tank and portable tank filling limits.* The outage in a cargo tank, portable tank, or compartment thereof must be at least one percent of the total capacity of the tank or compartment at the reference temperature of 115 °F (46.1 °C) for uninsulated tanks and 105 °F (40.6 °C) for insulated tanks. Tanks must not be liquid full at 131 °F (55 °C).

(3) *Bulk packagings for liquids toxic by inhalation.* For a liquid which meets the definition for Division 6.1, Packing Group I, based on inhalation toxicity, the outage in a bulk packaging must be at least five percent of the total capacity of the tank or compartment at the reference temperature of 115 °F (46 °C) for uninsulated tanks and 105 °F (40.6 °C) for insulated tanks.

(c) *Equivalent steel.* Where the regulations permit steel other than stainless steel to be used in place of a specified stainless steel (for example, as in § 172.102 of this subchapter, special provision B30), the minimum thickness for the steel must be obtained from one of the following formulas, as appropriate: Formula for metric units:

$$e_1 = (10e_0/Rm_1 A_1)^{1/2}$$

Formula for non-metric units:

$$e_1 = (112.3e_0/Rm_1 A_1)^{1/2}$$

where:

e_0 = Required thickness of the reference stainless steel in millimeters or inches, for metric units or non-metric units, respectively;

e_1 = Equivalent thickness of the non-stainless steel in millimeters or inches, for metric units or non-metric units, respectively;

Rm_1 = Specified minimum tensile strength of the non-stainless steel (from the appropriate specification in Part 178 of this subchapter) in deka-newtons per square millimeter or pounds per square inch, for metric units or non-metric units, respectively;

A_1 = Specified minimum percentage elongation of the non-stainless steel (from the appropriate specification in Part 178 of this subchapter) multiplied by 100 (for example, 20% times 100 equals 20).

(d) *Heating coils.* Tank car tanks used for materials meeting the definition for Division 2.3 or for Division 6.1, Packing Group I, based on inhalation toxicity, may not be equipped with interior or exterior heating coils.

104. In § 173.25, paragraph (b) would be removed, paragraph (a)(3) would be revised and paragraph (a)(5) would be added as follows:

§ 173.25 Authorized packages and overpacks.

(a) * * *

(3) Each package subject to the orientation marking requirements of § 172.312 of this subchapter is packed in the overpack with its filling holes up and the overpack is marked with package orientation marking arrows on two opposite vertical sides of the overpack with the arrows pointing in the correct direction of orientation.

* * * * *

(5) Packages containing corrosive or oxidizing materials in Packing Group I may not be overpacked with any other materials.

* * * * *

105. Section 173.26 would be revised as follows:

Section 173.26 Quantity limitations.

When quantity limitations do not appear in the packaging requirements of this subchapter, the permitted gross weight or capacity authorized for a packaging is as shown in the packaging specification or standard in Part 178 or 179, as applicable, of this subchapter.

106. Section 173.27 would be revised as follows:

§ 173.27 General requirements for transportation by aircraft.

(a) The requirements of this section are in addition to the requirements in § 173.24 and apply to packages offered or intended for transportation by aircraft. Notwithstanding any Packing Group III performance level specified in Column 5 of the § 172.101 Table, the required performance level for packages containing Class 4, 5, or 8 materials, when offered or intended for transportation by aircraft, is at the Packing Group II performance level, unless otherwise excepted from performance requirements in Subpart E of this part.

(b) *Packages authorized on board aircraft.* (1) When Column 9a of the § 172.101 Table indicates that a material is "Forbidden", that material may not be offered for transportation or transported by passenger-carrying aircraft.

(2) When Column 9b of the § 172.101 Table indicates that a material is "Forbidden", that material may not be offered for transportation or transported by aircraft.

(3) The maximum quantity of hazardous material in a package that may be offered for transportation or transported by passenger-carrying aircraft or cargo aircraft may not exceed that quantity prescribed for the material in Column 9a or 9b, respectively, of the § 172.101 Table.

(4) A package containing a hazardous material which is authorized on cargo aircraft but not on passenger aircraft must be labeled with the CARGO AIRCRAFT ONLY label required by § 172.402(b) of this subchapter and may not be offered for transportation or transported on passenger-carrying aircraft.

(c) *Pressure requirements.* (1) Packagings must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during transportation by aircraft.

(2) Packagings for which retention of liquid is a basic function must be capable of withstanding without leakage the greater of—

(i) An internal pressure which produces a pressure of not less than 75 kPa (10.88 psi) for liquids in Packing Group III of Class 3 or Division 6.1, or 95 kPa (13.8 psi) for other liquids; or

(ii) A pressure related to the vapor pressure of the liquid to be conveyed, determined by one of the following:

(A) The total pressure measured in the receptacle (i.e., the vapor pressure of the material and the partial pressure of air or other inert gases, less 100 kPa (14.5 psi)) at 55 °C (131 °F), multiplied by a safety factor of 1.5; determined on the

basis of a filling temperature of 15 °C (59 °F) and a degree of filling such that the receptacle is not completely liquid full at a temperature of 55 °C (131 °F) or less;

(B) 1.75 times the vapor pressure at 50 °C (122 °F) less 100 kPa (14.5 psi); or

(C) 1.5 times the vapor pressure at 55 °C (131 °F) less 100 kPa (14.5 psi).

(3) Notwithstanding the provisions of subparagraph (2) of this paragraph—

(i) Hazardous materials may be contained in an inner packaging which does not itself meet the pressure requirement provided that the inner packaging is packed within a supplementary packaging which does meet the pressure requirement and other applicable packaging requirements of this subchapter.

(ii) Packagings which are subject to the hydrostatic pressure test and marking requirements of §§ 178.605 and 178.503 through (a)(5), respectively, of this subchapter must have a marked test pressure of not less than 250 kPa (36.3 psi) for liquids in Packing Group I, 80 kPa (11.6 psi) for liquids in Packing Group III of Class 3 or Division 6.1, and 100 kPa (14.5 psi) for other liquids.

(d) *Closures.* Stoppers, corks or other such friction-type closures must be held securely, tightly and effectively in place by positive means.

(e) *Absorbent materials.* Except as otherwise provided in this subchapter, liquids in Packing Group I or II of Class 3, 4, 5, 6, or 8, when in glass or earthenware inner packagings, must be packaged using material capable of absorbing and not likely to react dangerously with the liquid. Absorbent material is not required if the inner packagings are so protected that breakage of them and leakage of their contents from the outer packaging is not likely to occur under normal conditions of transportation and is not required for packagings containing liquids in Packing Group III for transport on cargo aircraft only. Where absorbent material is required and an outer packaging is not liquid-tight, a means of containing the liquid in the event of leakage must be used in the form of a leakproof liner, plastic bag or other equally efficient means of containment. Where absorbent material is required, the quantity and disposition of it in each outer packaging must be as follows:

(1) For packagings containing liquids in Packing Group I for transport on passenger-carrying aircraft, each packaging must contain sufficient absorbent material to absorb the contents of all inner packagings containing such liquids;

(2) For packagings containing liquids in Packing Group I for transport on cargo aircraft only and packagings

containing liquids in Packing Group II for transport on passenger aircraft, each package must contain sufficient absorbent material to absorb the contents of any one of the inner packagings containing such liquids and, where they are of different sizes and quantities, sufficient absorbent material to absorb the contents of the inner packaging containing the greatest quantity of liquid.

(f) *Combination packagings.* Unless otherwise specified in this Part, or in § 171.11 of this subchapter, when combination packagings are offered for transportation by aircraft, inner packagings must conform to the quantity limitations set forth in Table 1 for transport on passenger-carrying aircraft and Table 2 for transport on cargo aircraft only, as follows:

TABLE 1.—MAXIMUM NET CAPACITY OF INNER PACKAGINGS FOR TRANSPORTATION ON PASSENGER-CARRYING AIRCRAFT

Maximum net quantity per package from column 9a of the § 172.101 Table	Maximum authorized net capacity of inner packagings	
	Glass, earthenware or fiber inner packagings	Metal or plastic inner packagings
Liquids:		
Not greater than 0.5L	0.5L	0.5L
Greater than 0.5L, not greater than 1L	0.5L	1L
Greater than 1L, not greater than 5L	1L	5L
Greater than 5L, not greater than 60L	2.5L	10L
Greater than 60L, not greater than 220L	5L	25L
Greater than 220L	No limit	No limit
Solids:		
Not greater than 5 kg	0.5 kg	1 kg
Greater than 5 kg, not greater than 25 kg	1 kg	2.5 kg
Greater than 25 kg, not greater than 200 kg	5 kg	10 kg
Greater than 200 kg	No limit	No limit

TABLE 2.—MAXIMUM NET CAPACITY OF INNER PACKAGINGS FOR TRANSPORTATION ON CARGO AIRCRAFT ONLY

Maximum net quantity per package from column 9b of the § 172.101 Table	Maximum authorized net capacity of inner packagings	
	Glass, earthenware or fiber inner packagings	Metal or plastic inner packagings
Liquids:		
Not greater than 2.5L	1L	1L
Greater than 2.5L, not greater than 30L	2.5L	2.5L
Greater than 30L, not greater than 60L	5L	10L
Greater than 60L, not greater than 220L	5L	25L
Greater than 220L	No limit	No limit
Solids:		
Not greater than 15 kg	1 kg	2.5 kg
Greater than 15 kg, not greater than 50 kg	2.5 kg	5 kg
Greater than 50 kg, not greater than 200 kg	5 kg	10 kg

TABLE 2.—MAXIMUM NET CAPACITY OF INNER PACKAGINGS FOR TRANSPORTATION ON CARGO AIRCRAFT ONLY—Continued

Maximum net quantity per package from column 9b of the § 172.101 Table	Maximum authorized net capacity of inner packagings		Marked, or rated, capacity (net mass) not over	Minimum thickness of packaging material	
	Glass, earthenware or fiber inner packagings	Metal or plastic inner packagings		Metal drum or jerrican	Plastic drum or jerrican
20L (20 kg)	0.6 mm (0.024 in.)	1.2 mm (0.047 in.)			
40L (40 kg)	0.7 mm (0.028 in.)	1.8 mm (0.071 in.)			
120L (120 kg)	0.9 mm (0.035 in.)	2.2 mm (0.087 in.)			
220L (220 kg)	1.0 mm (0.039 in.)	2.2 mm (0.087 in.)			
450L (400 kg)	1.8 mm (0.071 in.)	5.0 mm (0.197 in.)			

(g) **Cylinders.** For any cylinder containing hazardous materials and incorporating valves, sufficient protection must be provided to prevent operation of and damage to, the valves during transportation, by one of the following methods:

- (1) By equipping each cylinder with securely attached valve caps or protective headrings; or
- (2) By boxing or crating the cylinder.
- (h) **Tank cars and cargo tanks.** Tank cars and cargo tanks containing hazardous materials may not be transported aboard aircraft.

107. Section 173.28 would be revised as follows:

S 173.28 Reuse, reconditioning and remanufacture of packagings.

(a) **Reuse.** Packagings and receptacles used more than once must be in such condition, including closure devices and cushioning materials, that they conform in all respects to the prescribed requirements of this subchapter, including the following provisions and limitations:

- (1) Before reuse, each packaging must be inspected and must not be reused unless free from rupture, corrosion, other damage or incompatible residue;
- (2) Before reuse, packagings subject to the leakproofness test with air prescribed in § 178.604 shall be—

(i) Retested using an internal air pressure (gauge) of at least 48 kilopascals (7.0 pounds); and

(ii) Marked as required by paragraph (b) of this section and § 178.503(c) of this subchapter;

(3) Packagings made of paper, plastic film, textile or fiberboard are not authorized for reuse; and

(4) Metal and plastic drums, jerricans and the metal or plastic outer packagings of composite packagings are authorized for reuse only when they are marked in millimeters with the minimum thickness of the packaging material and conform to the following minimum construction criteria:

(5) Plastic inner packagings of composite packagings must have a minimum thickness of 1.5mm (0.059 inch).

(b) **Reconditioning.** For the purpose of this subchapter, reconditioning is the repair, replacement of non-integral packaging components (such as removable gaskets, closure devices, cushioning material, etc.) or leakproofness testing of non-bulk packagings, other than cylinders. A person who reconditions a packaging manufactured under the provisions of Subpart L of Part 178 of this subchapter, shall mark that packaging as required by § 178.503(c) of this subchapter. The marking is the certification of the reconditioner that the packaging conforms to the standard for which it is marked and that all functions performed by the reconditioner which are prescribed by this subchapter have been performed in compliance with this subchapter.

(c) **Remanufacture.** For the purpose of this subchapter, remanufacture is the conversion of a non-specification, non-bulk packaging to a DOT specification or UN standard, the conversion of a packaging meeting one specification or standard to another specification or standard (for example, conversion of 1A1 non-removable head drums to 1A2 removable head drums) or the replacement of integral structural packaging components (such as non-removable heads on drums). A person who remanufactures a non-bulk packaging to conform to a specification or standard in Part 178 of this subchapter is subject to the requirements of Part 178 as a manufacturer.

108. Section 173.29 would be revised as follows:

S 173.29 Empty packagings.

(a) Except as otherwise provided in this section, an empty packaging containing only the residue of a hazardous material shall be offered for transportation and transported in the same manner as when it previously contained a greater quantity of that hazardous material.

(b) Notwithstanding the requirements of paragraph (a) of this section, an empty packaging is not subject to any

other requirements of this subchapter if it conforms to the following provisions:

(1) Any hazardous material shipping name and identification number markings, and any hazard warning labels or placards are removed or obliterated. This provision does not apply to transportation in a transport vehicle or a freight container if the packaging is not visible during transportation and the packaging is loaded by the shipper and unloaded by the shipper or consignee;

(2) The packaging—

(i) Is unused; or
(ii) Is sufficiently cleaned of residue and purged of vapors to remove any potential hazard; or

(iii) Is refilled with a material which is not hazardous to such an extent that any residue remaining in the packaging no longer poses a hazard; or

(iv) Contains only the residue of—
(A) A Class 9 or ORM-D material; or

(B) An ORM-E material which no longer meets the definition in § 171.8 of this subchapter for either a hazardous substance or a hazardous waste; or

(C) A nonflammable gas with no subsidiary hazard at a pressure less than 40 psia; (275.8 kPa) at 70 °F (21 °C); and

(3) Any material contained in the packaging does not meet the definitions in § 171.8 of this subchapter for either a hazardous substance or a hazardous waste.

(c) A non-bulk packaging containing only the residue of a hazardous material covered by Table 2 of § 172.504 of this subchapter—

(1) Does not have to be included in determining the applicability of the placarding requirements of Subpart F of Part 172 of this subchapter; and

(2) Is not subject to the shipping paper requirements of this subchapter when collected and transported by a contract or private carrier for reconditioning, manufacture or reuse.

(d) Notwithstanding the stowage requirements in Columns 10a and 10b of the § 172.101 Table for transportation by vessel, an empty drum or cylinder may be stowed on deck or under deck.

(e) Specific provisions for describing an empty packaging on a shipping paper appear in § 172.203(e) of this subchapter.

(f) An empty tank car must conform to the placarding requirements specified in § 172.510(c) of this subchapter.

109. In § 173.31, in paragraph (a)(1) the words "dangerous articles" would be revised to read "hazardous materials" and in paragraph (c), footnote * would be removed from Retest Table 1 and from the footnotes following the table. In

addition, paragraphs (a)(5), (a)(6), (a)(7), (a)(8), (a)(9), and (a)(10) would be revised and paragraphs (a)(11) through (a)(13) would be added, as follows:

§ 173.31 Qualification, maintenance, and use of tank cars.

(a) * * *

(5) Each DOT specification tank car shall be equipped with a coupler vertical restraint system in accordance with § 179.14 of this subchapter.

(6) After December 31, 1987, each non-specification tank car shall be equipped with a coupler vertical restraint system in accordance with § 179.14 of this subchapter.

(7) Pressure relief devices on tank car tanks must be of a type and design approved by the AAR Committee on Tank Cars and be made of metal not subject to deterioration by the lading.

(8) A Specification DOT-106A or 110A multi-unit tank car tank may be offered for transportation aboard a passenger vessel only as authorized in § 173.32(a)(4).

(9) Lading temperature must be within the tank design temperature range.

(10) Tank test pressure must be equal to or greater than the greatest of the following:

(i) 180 percent of the sum of lading vapor pressure at the reference temperature of 46.1 °C (115 °F) for uninsulated tanks or 40.6 °C (105 °F) for insulated tanks plus static head plus gas padding pressure in the ullage space or dome of tank;

(ii) 133 percent of the maximum loading or unloading pressure, whichever is greater; or

(iii) The minimum pressure prescribed by the specification in Part 179 of this subchapter or for the specific hazardous material in the applicable packaging section in Subpart F or G of this part.

(11) Air pressure may not be used to load or unload any lading which may create an enriched mixture within the flammability range of the lading in the vapor space of the tank.

(12) Unless otherwise specifically provided for in this subchapter, tank car tanks used for materials meeting the definition for Division 6.1 liquids, Packing Group I or II, Class 2 gases, or Class 3 or 4 liquids must be equipped with reclosing pressure relief devices having adequately sized venting capacity.

(13) For tanks used to transport materials with a primary or secondary hazard of Class 8 which are to be reused for Class 2 materials, both tank and pressure relief valves shall be retested prior to loading with the Class 2 material.

* * * * *

110. In § 173.32 paragraph (a)(6) and paragraphs (q) through (u) would be added as follows:

§ 173.32 Qualification, maintenance and use of portable tanks.

(a) * * *

(6) A DOT 51 portable tank may be used where DOT 56 or DOT 57 type portable tanks or DOT 60 portable tanks are authorized. A DOT 60 portable tank may be used where DOT 56 or DOT 57 type portable tanks are authorized. A higher integrity tank used instead of a specified portable tank must meet the same design profile; e.g., a DOT 51 portable tank must be lined, if used instead of a lined DOT 60 portable tank.

* * * * *

(q) *Loading requirements.* A portable tank may not be loaded with a hazardous material that—

(1) Has a lading density exceeding the tank's design maximum density, or

(2) Is warmer or colder than the tank's design temperature range.

(r) Tank design pressure must be equal to or greater than the greatest of the following:

(1) 120 percent of the sum of lading vapor pressure plus static head plus gas padding pressure in the ullage space or dome of tank;

(2) The maximum loading or unloading pressure, whichever is greater; or

(3) The pressure prescribed for the specific hazardous material in Subpart F or G of this part, or in Part 172, as applicable.

(s) Where a DOT 60 or marine portable tank is authorized, minimum tank design pressure is 25 psi (172.4 kPa) for any liquid lading that meets more than one hazard class definition, unless otherwise specified.

(t) Air pressure may not be used to load or unload any lading which may create an enriched mixture within the flammability range of the lading in the vapor space of the tank.

(u) A portable tank in service for a Class 3 or 4 material, or Division 6.1 liquid, must be equipped with a reclosing pressure relief valve having adequately-sized venting capacity.

111. In § 173.32c, paragraphs (a), (b), (g)(2) and (o) would be revised to read as follows:

§ 173.32c Use of Specification IM portable tanks.

(a) No person may offer a hazardous material for transportation in an IM portable tank except as authorized by this subchapter.

(b) Except as otherwise provided in this subpart, an IM portable tank may not be used for the transportation of a

hazardous material unless it meets the requirements of this subchapter.

* * * * *

(g) * * *

(2) When this paragraph is specified for a hazardous material by the IM Tank Table in § 172.102 of this subchapter, each filling or discharge connection located below the normal liquid level of the tank, or compartment thereof, has three serially-mounted closures consisting of an internal discharge valve capable of being closed from a location remote from the valve itself, an external valve, and a bolted blank flange or other suitable, liquid-tight closure on the outlet side of the external valve.

* * * * *

(o) An IM 101 tank may be used whenever an IM 102 tank is authorized provided it meets the requirements for pressure relief devices, bottom outlets and any other special provisions specified for the IM 102 tank in § 172.102 of this subchapter.

§ 173.32d [Removed]

112. Section 173.32d would be removed.

113. In 173.33, paragraphs (l) through (q) would be added, as follows:

§ 173.33 Qualification, maintenance and use of cargo tanks.

* * * * *

(l) A cargo tank may not be loaded with a hazardous material that:

(1) Has a density exceeding the tank's design maximum density; or

(2) Is warmer or colder than the tank design temperature range.

(m) Tank design pressure must be equal to or greater than the greatest of the following:

(1) 120 percent of the sum of lading vapor pressure plus static head plus gas padding pressure in the ullage space or dome of tank;

(2) The maximum loading or unloading pressure, whichever is greater; or

(3) The pressure prescribed in Subpart F or G of this part, for the specific hazardous material as applicable, including—

(i) For compressed gases and certain refrigerated liquids, the pressure prescribed in § 173.315; and

(ii) For cryogenic liquids, the pressure prescribed in § 173.318.

(n) An MC 331 type cargo tank may be used where MC 306, MC 307 or MC 312 type cargo tanks are authorized. An MC 307 or MC 312 type cargo tank may be used where MC 306 type cargo tanks are authorized. A higher integrity tank used in lieu of a specified tank must meet the

same design profile (for example, an MC 331 cargo tank must be lined if used in place of a lined MC 312 cargo tank.)

(d) Unless otherwise specified, where MC 307 and MC 312 cargo tanks are authorized, minimum tank design pressure is 25 psi (172.4 kPa) for any liquid lading that meets more than one hazard class definition.

(p) Air pressure may not be used to load or unload any lading which may create an enriched mixture within the flammability range of the lading in the vapor space of the tank. (See § 173.33(b)(3).)

(q) A cargo tank in service for a Class 3 or 4 material or Division 6.1 liquid must be equipped with a reclosing pressure relief valve having adequately-sized venting capacity. (See § 173.33(d)(1) and (2).)

114. A new § 173.40 would be added, to read as follows:

§ 173.40 General packaging requirements for poisonous materials required to be packaged in cylinders.

When this section is referenced in the packaging section for a hazardous material elsewhere in this part, the following requirements are applicable to cylinders used for that material:

(a) *Authorized cylinders.* A cylinder must conform to one of the specifications for cylinders in Subpart C of Part 178 of this subchapter, except that Specification 8, 8AL and 39 cylinders are not authorized.

(b) *Outage and pressure requirements.* The pressure of the hazardous material at 55 °C (131 °F) must not exceed the service pressure of the cylinder. Sufficient outage shall be provided so that the cylinder will not be liquid full at 55 °C (131 °F).

(c) *Closures.* Each cylinder must be closed with a plug or valve conforming to the following:

(1) Each plug or valve must have a taper-threaded connection directly to the cylinder and be capable of withstanding the test pressure of the cylinder;

(2) Each valve must be of the packless type with non-perforated diaphragm, except that for corrosive materials, a valve may be of the packed type provided the assembly is made gas-tight by means of a seal cap with gasketed joint attached to the valve body or the cylinder to prevent loss of material through or past the packing;

(3) Each valve outlet must be sealed by a threaded cap or threaded solid plug; and

(4) Cylinder, valves, plugs, outlet caps, luting and gaskets must be compatible with each other and with the lading.

(d) *Additional protection.* Additional protection requirements for thin-walled cylinders and for cylinders equipped with valves are as follows:

(1) Each cylinder which has a wall thickness at any point of less than 2.03 mm (0.080 inch) and each cylinder which does not have fitted valve protection must be overpacked in a 4C1, 4D, 4F, 4G, 4H1 or 4H2 box. The box must conform to overpack provisions in § 173.25. Box and valve protection must be of sufficient strength to protect all parts of the cylinder and valve, if any, from deformation and breakage resulting from a drop of 2.0 meters (6.56 ft) or more onto a concrete floor, impacting at an orientation most likely to cause damage.

(2) Each cylinder equipped with a valve, if not overpacked in a box in accordance with paragraph (d)(1) of this section, must be equipped with a protective cap or other means of valve protection sufficient to protect the valve from deformation and breakage resulting from a drop of 2.0 meters (6.56 ft) or more onto a concrete floor, impacting at an orientation most likely to cause damage.

(e) *Interconnection.* Cylinders may not be interconnected.

115. In Part 173, Subparts D, E and F would be revised as follows:

Subpart D—Definitions, Classification, Packing Group Assignments and Exceptions for Hazardous Materials Other Than Class 1 and Class 7

Sec.

173.115 Class 2, Divisions 2.1, 2.2, and 2.3—Definitions.

173.116 Class 2—Assignment of Packing Group.

173.120 Class 3—Definitions.

173.121 Class 3—Assignment of Packing Group.

173.124 Class 4, Divisions 4.1, 4.2 and 4.3—Definitions.

173.125 Class 4, Assignment of Packing Group.

173.128 Class 5, Divisions 5.1 and 5.2—Definitions.

173.129 Class 5—Assignment of Packing Group.

173.132 Class 6, Division 6.1—Definitions.

173.133 Division 6.1—Assignment of Packing Group.

173.134 Class 6, Division 6.2—Definitions.

173.136 Class 8—Definitions.

173.137 Class 8—Assignment of Packing Group.

173.140 Class 9—Definitions.

173.141 Class 9—Assignment of Packing Group.

173.144 Other Regulated Materials (ORM)—Definitions.

173.145 Other Regulated Materials—Assignment of Packing Group.

173.150 Exceptions for Class 3 (flammable and combustible liquids).

Sec.

173.151 Exceptions for Division 4.1 (flammable solids).

173.152 Exceptions for Division 5.1 (oxidizers) and Division 5.2 (organic peroxides).

173.153 Exceptions for Division 6.1 (poisonous materials).

173.154 Exceptions for Class 8 (corrosive materials).

173.155 Exceptions for Class 9 (miscellaneous hazardous materials).

173.156 Exceptions for ORM materials.

Subpart E—Non-bulk Packaging for Hazardous Materials Other Than Class 1 and Class 7

173.158 Nitric acid.

173.159 Batteries, wet.

173.160 Bombs, smoke, non-explosive (corrosive).

173.161 Chemical kits.

173.162 Gallium.

173.163 Hydrogen fluoride.

173.164 Mercury (metallic and articles containing mercury).

173.171 Smokeless powder for small arms.

173.172 Aircraft hydraulic power unit fuel tank.

173.173 Paint, paint-related material, adhesives and ink.

173.174 Refrigerating machines.

173.180 Aircraft thrust devices.

173.181 Pyrophoric materials (liquids).

173.182 Barium azide—50 percent or more water wet.

173.183 Nitrocellulose base film.

173.184 Highway or rail fusee.

173.185 Lithium batteries and cells.

173.186 Matches.

173.187 Pyrophoric solids, metals or alloys, n.o.s.

173.188 White or yellow phosphorus.

173.182 Packaging for certain Packing Group I poisonous materials.

173.193 Bromoacetone, methyl bromide, chloropicrin and methyl bromide or methyl chloride mixtures, etc.

173.194 Gas identification sets.

173.195 Hydrocyanic acid, liquid (prussic acid) and hydrocyanic acid liquefied.

173.196 Infectious substances (etiologic agents).

173.198 Nickel carbonyl.

173.201 Non-bulk packagings for liquid hazardous materials in Packing Group I.

173.202 Non-bulk packagings for liquid hazardous materials in Packing Group II.

173.203 Non-bulk packagings for liquid hazardous materials in Packing Group III.

173.204 Non-bulk, non-specification packagings for certain hazardous materials.

173.205 Specification cylinders for liquid hazardous materials.

173.211 Non-bulk packagings for solid hazardous materials in Packing Group I.

173.212 Non-bulk packagings for solid hazardous materials in Packing Group II.

173.213 Non-bulk packagings for solid hazardous materials in Packing Group III.

173.214 Packagings which require approval by the Director, OHMT.

173.216 Asbestos, blue or white.

173.217 Carbon dioxide, solid (dry ice).

173.218 Fish meal or fish scrap.

- 173.219 Life rafts, aircraft survival kits, etc.
 173.220 Internal combustion engines, self-propelled vehicles, and mechanical equipment containing internal combustion engines or wet batteries.
 173.221 Polystyrene beads, expandable.
 173.222 Wheelchairs equipped with wet electric storage batteries.
 173.225 Packagings for organic peroxides.
 173.226 Liquids toxic by inhalation, Division 6.1, Packing Group I, Zone A.
 173.227 Liquids toxic by inhalation, Division 6.1, Packing Group I, Zone B.
 173.228 Bromine pentafluoride or bromine trifluoride.
 173.229 Chloric acid solution or chlorine dioxide hydrate, frozen.
 173.230 Non-bulk packagings for ORM-D materials.

Subpart F—Bulk Packaging for Hazardous Materials Other Than Classes I and 7

- 173.240 Bulk packaging for certain flammable solids (Division 4.1), solid oxidizers (Division 5.1), corrosive solids (Class 8) and other similar low hazard materials.
 173.241 Bulk packaging for certain combustible liquids (Class 3), flammable solids (Divisions 4.2 and 4.3), and other similar hazardous materials.
 173.242 Bulk packagings for certain medium hazard liquids and solids, including solids with dual hazards.
 173.243 Bulk packaging for certain high hazard liquids and dual hazard liquids which pose a moderate hazard.
 173.243 Bulk packaging for certain pyrophoric liquids (Division 4.2), poisonous liquids with inhalation hazards (Division 6.1) and gases (Class 2).
 173.245 Bulk packaging for extremely hazardous materials such as poisonous gases (Division 2.3).
 173.248 Ethylene oxide.
 173.249 Bromine.

Subpart D—Definitions, Classification, Packing Group Assignments and Exceptions for Hazardous Materials Other Than Class 1 and Class 7.

§ 173.115 Class 2, Divisions 2.1, 2.2, and 2.3—Definitions.

(a) *Division 2.1 (Flammable gas).* (1) For the purpose of this subchapter, a "flammable gas" (Division 2.1) means any material which is a gas at 20 °C (68 °F) or less and 1 atmosphere (atm) of pressure (a material which has a boiling point of 20 °C (68 °F) or less at 1 atm) which—

(i) Is ignitable at 1 atm when in a mixture of 13% or less by volume with air; or

(ii) Has a flammable range at 1 atm with air of at least 12% regardless of the lower limit.

(2) The limits specified in paragraph (a)(1) of this section shall be determined at 1 atmosphere of pressure and a temperature of 20 °C (68 °F) in accordance with ASTM E681-79

Standard Test Method for Limits of Flammability of Chemicals.

(b) *Division 2.2 (non-flammable compressed gas—including compressed gas, liquefied gas, pressurized cryogenic gas and compressed gas in solution).* For the purpose of this subchapter, a "non-flammable compressed gas" (Division 2.2) means any material (or mixture) which—

(1) Exerts in the packaging a pressure of 40 psia (275.8 kPa) at 21.1 °C (70 °F) or, regardless of the pressure at 21.1 °C (70 °F), exerts in the container a pressure of 104 psia (717.1 kPa) at 54.4 °C (130 °F); and

(2) Does not meet the definition of Division 2.1 or 2.3.

(c) *Division 2.3 (Poisonous gas).* For the purpose of this subchapter, "poisonous gas" (Division 2.3) means a material which is a gas at 20 °C (68 °F) or less and one atmosphere of pressure (a material which has a boiling point of 20 °C (68 °F) or less at 1 atmosphere and which—

(1) Is known to be so toxic to humans as to pose a hazard to health during transportation, or

(2) In the absence of adequate data on human toxicity, is presumed to be toxic to humans because when tested on laboratory animals it has an LC50 less than 5000 ppm (see § 173.132(b)(3)).

(d) *Non-liquefied compressed gas.* A "non-liquefied compressed gas" means a gas, other than in solution, which in a packaging under the charged pressure is entirely gaseous at a temperature of 20 °C (68 °F).

(e) *Liquefied compressed gas.* A "liquefied compressed gas" means a gas which in a packaging under the charged pressure, is partially liquid at a temperature of 20 °C (68 °F).

(f) *Compressed gas in solution.* A "compressed gas in solution" is a non-liquefied compressed gas which is dissolved in a solvent.

(g) *Cryogenic liquid.* A "cryogenic liquid" means a refrigerated liquefied gas having a boiling point colder than -130 °F (-90 °C) at one atmosphere, absolute. A material meeting this definition is subject to requirements of this subchapter without regard to whether it meets the definition of a non-flammable compressed gas in paragraph (b) of this section. Each cryogenic liquid is partially described as "(* *, refrigerated liquid [cryogenic liquid])" in the § 172.101 Table.

(h) *Flammable range.* The term "flammable range" means the difference between the minimum and maximum volume percentages of the material in air that forms a flammable mixture.

(i) *Service pressure.* The term "service pressure" means the authorized pressure marking on the packaging. For example for a cylinder marked "DOT 3A1800" the service pressure is 1800 psig.

(j) *Refrigerant gas or Dispersant gas.*

The terms "Refrigerant gas" or "Dispersant gas" apply to all nonpoisonous refrigerant gases, dispersant gases (fluorocarbons) listed in §§ 172.101, 173.304(a)(2), 173.314(c), 173.315(a)(1) and 173.315(h), and mixtures thereof, or any other compressed gas meeting one of the following:

(1) A nonflammable mixture containing not less than 50% fluorocarbon content, having a vapor pressure not exceeding 260 psig (1792.7 kPa) at 130 °F (54.4 °C).

(2) A flammable mixture containing not less than 50% fluorocarbon content, not over 40% by weight of a flammable component, having a vapor pressure not exceeding 260 psig (1792 kPa) at 130 °F (54.4 °C).

§ 173.116 Class 2—Assignment of Packing Groups.

(a) The packing group of a Class 2, Division 2.3 material is assigned in Column 5 of the § 172.101 Table. There are no packing groups for Divisions 2.1 and 2.2. When the § 172.101 Table provides more than one packing group for a Division 2.3 material, or indicates that the packing group be determined on the basis of the grouping criteria for Division 2.3, the packing group shall be determined by applying the following criteria:

Packing group	Inhalation toxicity
I.....	LC50 less than or equal to 200 ppm
II.....	LC50 greater than 200 ppm and less than or equal to 1000 ppm
III.....	LC50 greater than 1000 ppm and less than or equal to 3000 ppm
IV.....	LC50 greater than 3000 ppm or less than or equal to 6000 ppm

(b) The criteria specified in paragraph (a) of this section are represented graphically in § 173.133, Figure 1.

§ 173.120 Class 3—Definitions.

(a) *Flammable liquid.* (1) For the purpose of this subchapter, a "flammable liquid" (Class 3) means any liquid having a flash point of not more than 60.5 °C (141 °F) with the following exceptions:

(i) Any liquid meeting one of the definitions specified in § 173.115 of this part.

(ii) Any mixture having one or more components with a flash point greater than 60.5 °C (141 °F) or higher, that

makes up at least 99 percent of the total volume of the mixture.

(2) For the purposes of this subchapter, a distilled spirit of 140 proof or lower is considered to have a flash point no lower than 23 °C (73 °F).

(b) *Combustible liquid.* (1) For the purpose of this subchapter, a "combustible liquid" (Class 3) means—

(i) Any liquid that does not meet the definition of any other hazard class specified in this subchapter and has a flash point above 60.5 °C (141 °F) and below 93.3 °C (200 °F); or

(ii) Any material that does not meet the definition of any other hazard class specified in this subchapter, has a flash point of 93.3 °C (200 °F) or greater and is offered for transportation or transported as a liquid at a temperature at or above its flash point.

(2) If a material has a flash point at or above 93.3 °C (200 °F) and does not meet the definition of a combustible liquid or any other hazard class, then it is not subject to the requirements of this subchapter.

(3) Except when offered or intended for transportation by vessel or aircraft, a flammable liquid with a flash point at or above 38 °C (100 °F) that does not meet the definition of any other hazard class may be reclassified as a combustible liquid.

(c) *Flash point.* (1) "Flash point" means the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. It shall be determined as follows:

(i) For a homogeneous, single-phase, liquid having a viscosity less than 45 S.U.S. at 38 °C (100 °F) that does not form a surface film while under test, one of the following test procedures shall be used:

(A) Standard Method of Test for Flash Point by Tag Closed Tester (ASTM D58-79); or

(B) Standard Methods of Test for Flash Point of Liquids by Setaflash Closed Tester (ASTM D3278-78).

(ii) For a liquid other than one meeting all of the criteria of paragraph (c)(1)(i) of this section, one of the following test procedures shall be used:

(A) Standard Method of Test for Flash Point by Pensky-Martens Closed Tester (ASTM D93-80). For cutback asphalt, use Method B of ASTM D93-80 or alternate tests authorized in this standard; or

(B) Standard Methods of Test for Flash Point of Liquids by Setaflash Closed Tester (ASTM D3278-78).

(2) For a liquid that is a mixture of compounds that have different volatility and flash points, its flash point shall be

determined as specified in paragraph (c)(1) of this section, on the material in the form in which it is to be shipped. If it is determined by this test that the flash point is higher than 20 °F (-6.7 °C) a second test shall be made as follows: A portion of the mixture shall be placed in an open beaker (or similar container) of such dimensions that the height of the liquid can be adjusted so that the ratio of the volume of the liquid to the exposed surface area is 8 to 1. The liquid shall be allowed to evaporate under ambient pressure and temperature (20 to 25 °C) for a period of 4 hours or until 10 percent by volume has evaporated, whichever comes first. A flash point is then run on a portion of the liquid remaining in the evaporation container and the lower of the two flash points shall be the flash point of the material.

(3) For flash point determinations by Setaflash closed tester, the glass syringe specified need not be used as the method of measurement of the test sample if a minimum quantity of 2 milliliters is assured in the test cup.

(d) If experience or other data indicate that the hazard of a material is greater or less than indicated by the criteria specified in paragraphs (a) and (b) of this section, the Director, OHMT, may revise the classification or make the material subject or not subject to the requirements of Parts 170-189 of this subchapter:

§ 173.121 Class 3—Assignment of Packing Group.

(a) The packing group of a Class 3 material is as assigned in Column 5 of the § 172.101 Table. When the § 172.101 Table provides more than one packing group for a hazardous material, or indicates that the packing group is to be determined on the basis of the grouping criteria for Class 3, the packing group shall be determined by applying the following criteria:

Packing group	Flash point (closed-cup)	Initial boiling point
I .....	.....	<35 °C (95 °F)
II	<23 °C (73 °F)	>35 °C (95 °F)
III	>23 °C, <60.5 °C (141 °F)	>35 °C (95 °F)

(b) Criteria for inclusion of viscous Class 3 materials in Packing Group III.

(1) Viscous Class 3 materials in Packing Group II with a flash point of less than 23 °C (73 °F) may be grouped in Packing Group III provided that—

(i) Less than 3 percent of the clear solvent layer separates in the solvent separation test;

(ii) The mixture contains not more than 5 percent of substances in Packing Group I or II of Division 6.1 or Class 8, or not more than 5 percent of substances

in Packing Group I of Class 3 requiring a POISON or CORROSIVE subsidiary label:

(iii) The capacity of the packaging is not more than 30 L (7.9 gallons); and

(iv) The viscosity and flash point are in accordance with the following table:

Flowtime in seconds	Flash point in degrees C	
	4 mm Cup	8 mm Cup
Over 20	Over 17.
Over 60	Over 10.
Over 100	Over -5.
Over 180	Over -1.
Over 220	Over -5.
Over 40	No lower limit.

(2) The methods by which the tests referred to in paragraph (b)(1) shall be performed are as follows:

(i) *Viscosity Test.* The flowtime in seconds is determined at 23 °C (73 °F) using the ISO Standard cup with a 4.0 millimeters (0.16 inches) jet (ISO-2431-72). Where the flowtime exceeds 200 seconds, a second test is carried out using the ISO standard cup but modified to take a jet of 8 millimeters (0.31 inches) diameter.

(ii) *Solvent Separation Test.* This test is carried out at 23 °C (73 °F) using a 100 milliliters (3.38 ounces) measuring cylinder of the stoppered type of approximately 25.0 centimeters (9.84 inches) total height and of a uniform internal diameter of approximately 30 millimeters (1.18 inches) over the calibrated section. The sample should be stirred to obtain a uniform consistency, and poured in up to the 100 milliliter mark. The stopper should be inserted and the cylinder left standing undisturbed for 24 hours. After 24 hours, the height of the upper separated layer should be measured and the percentage of this layer as compared with the total height of the sample calculated.

§ 173.124 Class 4, Divisions 4.1, 4.2 and 4.3—Definitions.

(a) *Division 4.1 (Flammable solid).* For the purpose of this subchapter, "flammable solid" (Division 4.1) means any solid material, other than one in Class 1, which, under the conditions normally incident to transportation, is readily combustible, or may cause or contribute to fire through friction. This division includes wetted explosives, self-reactive materials, readily combustible solids and solids which may cause or contribute to a fire through friction.

(b) *Division 4.2 (Spontaneously combustible material).* For the purpose of this subchapter, "spontaneously combustible material" (Division 4.2) means a material which is likely to heat

spontaneously under conditions normally incident to transportation, or to heat up in contact with air and being then likely to catch fire. This class includes pyrophoric liquids. A "pyrophoric liquid" means a liquid that ignites spontaneously in dry or moist air at or below 54.5 °C (130.1 °F).

(c) *Division 4.3 (Dangerous when wet materials).* For the purpose of this subchapter, "dangerous when wet material" (Division 4.3) means a material that, by interaction with water, is liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

(d) Criteria for evaluating materials for inclusion in Class 4 are set forth in Chapter 14 of the UN Recommendations.

§ 173.125 Class 4—Assignment of Packing Group.

The packing group of Class 4 materials shall be as assigned in Column 5 of the § 172.101 table. Criteria for assignment of packing groups are set forth in Chapter 14 of the UN Recommendations.

§ 173.128 Class 5, Divisions 5.1 and 5.2—Definitions.

(a) *Division 5.1 (Oxidizer).* For the purpose of this subchapter, "oxidizer" (Division 5.1) means a material such as a chlorate, permanganate, inorganic peroxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter.

(b) *Division 5.2 (Organic peroxide).* For the purpose of this subchapter "organic peroxide" (Division 5.2) means an organic compound containing the bivalent -O-O- structure and which may be considered a derivative of hydrogen peroxide where one or more of the hydrogen atoms have been replaced by organic radicals unless:

(1) The material meets the definition of an explosive as prescribed in Subpart C of this part, in which case it must be classed as an explosive.

(2) The material is forbidden to be offered for transportation according to § 172.101 or § 173.21 of this subchapter.

(3) It is determined that the predominant hazard of the material containing an organic peroxide is other than that of an organic peroxide, or

(4) The Director, OHMT, has determined that the material does not present a hazard in transportation.

(c) Criteria for evaluating materials for inclusion in Class 5 are set forth in Chapter 11 of the UN Recommendations.

§ 173.129 Class 5—Assignment of Packing Group.

The packing group of a Class 5 material shall be as assigned in Column 5 of the § 172.101 Table.

§ 173.132 Class 6, Division 6.1—Definitions.

(a) For the purpose of this subchapter, "poisonous materials" (Division 6.1) means a material, other than a gas, which is known to be so toxic to humans as to afford a hazard to health during transportation, or which, in the absence of adequate data on human toxicity, is presumed to be toxic to humans because it falls within any one of the following categories when tested on laboratory animals:

(1) *Oral Toxicity.* A liquid with an LD₅₀ for acute oral toxicity of not more than 500 mg/kg or a solid with an LD₅₀ for acute oral toxicity of not more than 200 mg/kg.

(2) *Dermal Toxicity.* A material with an LD₅₀ for acute dermal toxicity of not more than 1000 mg/kg.

(3) *Inhalation Toxicity.* (i) A dust or mist with an LC₅₀ for acute toxicity on inhalation of not more than 10 mg/L; or

(ii) A material with a saturated vapor concentration in air at 20 °C (68 °F) of more than one-fifth of the LC₅₀ for acute toxicity on inhalation of vapors and with an LC₅₀ for acute toxicity on inhalation of vapors of not more than 5000 ml/m³.

(b) For the purposes of this subchapter—

(1) LD₅₀ for acute toxicity means that dose of the material administered which is most likely to cause death within 14 days in half of both male and female young adult albino rats. The number of animals tested must be sufficient to give a statistically significant result and be in conformity with good pharmacological practices. The result is expressed in mg/kg body mass.

(2) LD₅₀ for acute dermal toxicity means that dose of the material which, administered by continuous contact for 24 hours with the bare skin of an albino rabbit, is most likely to cause death within 14 days in half of the animals tested. The number of animals tested must be sufficient to give a statistically significant result and be in conformity with good pharmacological practices. The result is expressed in mg/kg body mass.

(3) LC₅₀ for acute toxicity on inhalation means that concentration of vapor, mist, or dust which, administered by continuous inhalation for one hour to both male and female young adult albino rats, is most likely to cause death within 14 days in half of the animals tested. If the material is administered to the animals as a dust or mist, more than 90 percent of the particles available for inhalation in the test must have a diameter of 10 microns or less if it is reasonably foreseeable that such

concentrations could be encountered by a human during transport. The result is expressed in mg/L of air for dusts and mists or in mL/m³ of air (parts per million) for vapors. See § 173.133(b) for LC₅₀ determination for mixtures and for limit tests.

(i) When provisions of this subchapter require the use of the LC₅₀ for acute toxicity on inhalation of dusts and mists based on a one-hour exposure and such data is not available, the LC₅₀ for acute toxicity on inhalation based on a four-hour exposure may be multiplied by four and the product substituted for the one-hour LC₅₀ for acute toxicity on inhalation.

(ii) When the provisions of this subchapter require the use of the LC₅₀ for acute toxicity on inhalation of vapors based on a one-hour exposure and such data is not available, the LC₅₀ for acute toxicity on inhalation based on a four-hour exposure may be multiplied by two and the product substituted for the one-hour LC₅₀ for acute toxicity on inhalation.

(c) The foregoing categories shall not apply if the Director, OHMT has determined that the physical characteristics of the material or its probable hazards to humans as shown by documented experience indicate that the material will not cause serious sickness or death.

§ 173.133 Division 6.1—Assignment of Packing Group.

(a) The packing group of Division 6.1 materials shall be as assigned in Column 5 of the § 172.101 Table. When the § 172.101 Table provides more than one packing group for a hazardous material, the packing group shall be determined by applying the following criteria:

(1) The packing group assignment for routes of administration other than inhalation of vapors shall be in accordance with the following table:

Packing group	Oral toxicity LD ₅₀ (mg/kg)	Dermal toxicity LD ₅₀ (mg/kg)	Inhalation toxicity by dusts and mists LC ₅₀ (mg/L)
I.....	<15.....	<40.....	<0.5.....
II.....	>5, <50..... solids: >50, <200, liquids: >50, <500.	>40, <1200..... >200, <1000.....	>0.5, <2..... >2, <10.....
III.....			

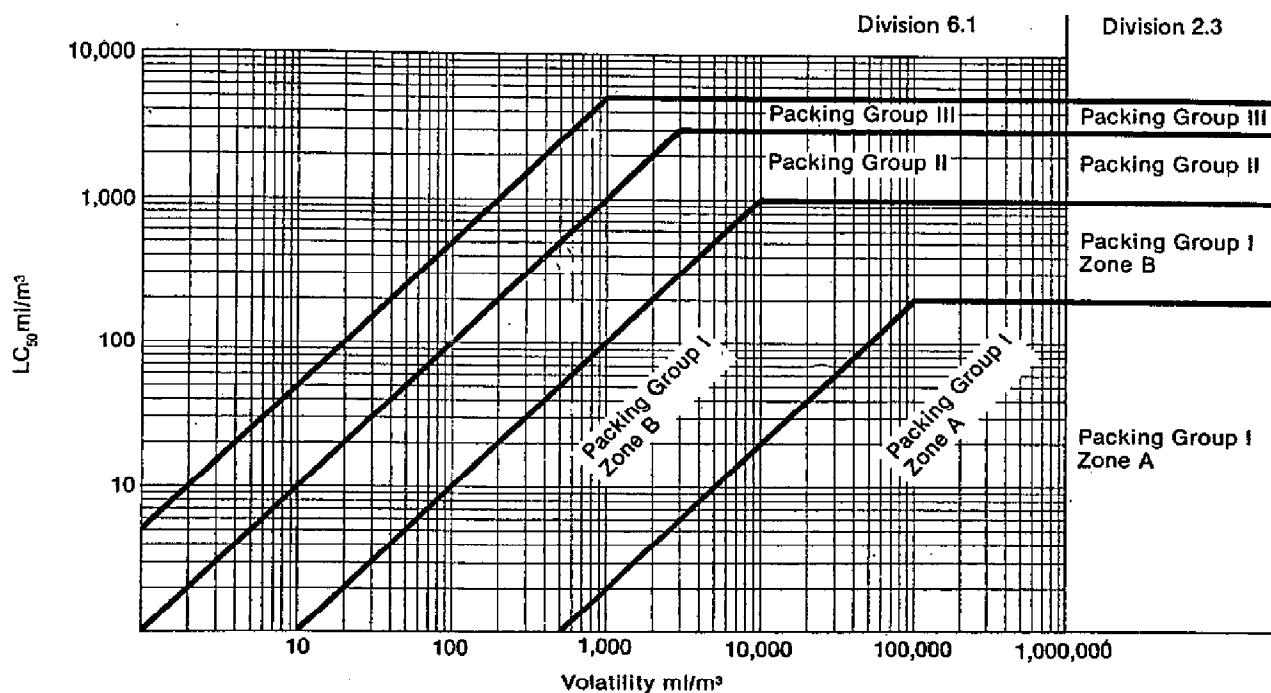
(2) The packing group assignment based on inhalation of vapors shall be in accordance with the following table:

Packing group	Vapor concentration and toxicity	Packing group	Vapor concentration and toxicity
I, Zone A.....	$V > 500 \text{ LC}_{50}$ and $\text{LC}_{50} < 200 \text{ mL/m}^3$	III	$V > 2 \text{ LC}_{50}$; $\text{LC}_{50} < 5000 \text{ mL/m}^3$; and the criteria for Packing Group I, Zone A are not met.
I, Zone B.....	$V > 10 \text{ LC}_{50}$; $\text{LC}_{50} < 1000 \text{ mL/m}^3$; and the criteria for Packing Group I, Zone A are not met.	II	$V > \text{LC}_{50}$; $\text{LC}_{50} < 3000 \text{ mL/m}^3$; and the criteria for Packing Group I are not met.

Note.— V is the saturated vapor concentration in air of the material in mL/m^3 at 20°C and standard atmospheric pressure.

These criteria are represented graphically in Figure 1:

**Figure 1
Inhalation Toxicity: Packing Group Borderlines**



(3) When the packing group determined by applying these criteria is different for two or more (oral, dermal or inhalation) routes of administration, the packing group assigned to the material shall be that indicated for the highest degree of toxicity for any of the routes of administration.

(4) Notwithstanding the provisions of this paragraph, the packing group of a

tear gas substance is as assigned in Column 5 of the § 172.101 Table.

(b) The packaging groups for Division 6.1 mixtures that are poisonous (toxic) by inhalation may be determined by one of the following methods:

(1) Where LC_{50} data is available on each of the poisonous (toxic) substances comprising the mixture—

(i) The LC_{50} of the mixture is estimated using the formula:

$$\text{LC}_{50} (\text{mixture}) = \frac{\sum f_i}{\sum \frac{f_i}{\text{LC}_{50i}}}$$

where:
 f_i = mole fraction of the i^{th} component substance of the liquid

$LC_{50,i}$ = mean lethal concentration of the i^{th} component substance in ml/m^3

(ii) The volatility of each component substance is estimated using the formula:

$$V_i = P_i \times \frac{10^6}{760} \text{ ml/m}^3$$

where:

P_i = partial pressure of the i^{th} component substance in mmHg at 20°C and one atmosphere pressure

(iii) The ratio of the volatility to the LC_{50} is calculated using the formula:

$$R = \sum_{i=1}^n \frac{V_i}{LC_{50,i}}$$

(iv) Using the calculated values LC_{50} (mixture) and R , the packaging group for the mixture is determined:

Packaging group	Ratio of volatility and LC_{50}
I, Zone A.....	$R > 500$ and LC_{50} (mixture) $< 200 \text{ ml/m}^3$. $R > 10$ and LC_{50} (mixture) $< 1000 \text{ ml/m}^3$; and the criteria for Packing Group I, Zone A, are not met.
II	$R > 1$ and LC_{50} (mixture) $< 3000 \text{ ml/m}^3$; and the criteria for Packing Group I are not met.
III.....	$R > \frac{1}{2}$ and LC_{50} (mixture) $< 5000 \text{ ml/m}^3$; and the criteria for Packing Groups I and II are not met.

(2) In the absence of LC_{50} data on the poisonous (toxic) constituent substances, the mixture may be assigned a packaging group based on the following simplified threshold toxicity tests. When these threshold tests are used, the most restrictive packaging group must be determined and used for the transportation of the mixture.

(i) A mixture is assigned to Packaging Group I, Zone A only if both the following criteria are met:

(A) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 200 ml/m^3 vaporized mixture in air. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for fourteen days. If five or more of the animals die within the fourteen day observation period, the

mixture is presumed to have an LC_{50} equal to or less than 200 ml/m^3 .

(B) A sample of the vapor in equilibrium with the liquid mixture is diluted with 499 equal volumes of air to form a test atmosphere. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for fourteen days. If five or more of the animals die within the fourteen day observation period, the mixture is presumed to have a volatility equal to or greater than 500 times the mixture LC_{50} .

(ii) A mixture is assigned to Packaging Group I, Zone B only if both the following criteria are met, and the mixture does not meet the criteria for Packaging Group I, Zone A:

(A) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 1000 ml/m^3 vaporized mixture in air. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for fourteen days. If five or more of the animals die within the fourteen day observation period, the mixture is presumed to have an LC_{50} equal to or less than 1000 ml/m^3 .

(B) A sample of the vapor in equilibrium with the liquid mixture is diluted with 9 equal volumes of air to form a test atmosphere. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for fourteen days. If five or more of the animals die within the fourteen day observation period, the mixture is presumed to have a volatility equal to or greater than 10 times the mixture LC_{50} .

(iii) A mixture is assigned to Packaging Group II only if both the following criteria are met, and the mixture does not meet the criteria for Packaging Group I (Zone A or B):

(A) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 3000 ml/m^3 vaporized mixture in air. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for fourteen days. If five or more of the animals die within the fourteen day observation period, the mixture is presumed to have an LC_{50} equal to or less than 3000 ml/m^3 .

(B) A sample of the vapor in equilibrium with the liquid mixture is used to form a test atmosphere. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for fourteen days. If five or more of the animals die within the fourteen day observation period, the mixture is presumed to have

a volatility equal to or greater than the mixture LC_{50} .

(iv) A mixture is assigned to Packaging Group III only if both the following criteria are met, and the mixture does not meet the criteria for Packaging Groups I (Zone A or B) or II:

(A) A sample of the liquid mixture is vaporized and diluted with air to create a test atmosphere of 5000 ml/m^3 vaporized mixture in air. Ten albino rats (five male and five female) are exposed to the test atmosphere for one hour and observed for fourteen days. If five or more of the animals die within the fourteen day observation period, the mixture is presumed to have an LC_{50} equal to or less than 5000 ml/m^3 .

(B) The vapor pressure of the liquid mixture is measured and if the vapor pressure is equal to or greater than 1000 ml/m^3 , the mixture is presumed to have a volatility equal to or greater than $\frac{1}{2}$ the mixture LC_{50} .

§ 173.134 Class 6, Division 6.2—Definitions.

(a) For the purpose of this subchapter—

(1) An "infectious substance" (Division 6.2) means a viable microorganism, or its toxin, which causes or may cause human disease, and is limited to those agents listed in 42 CFR 72.3 of the regulations of the Department of Health and Human Services. The terms "infectious substance" and "etiologic agent" are synonymous.

(2) A "diagnostic specimen" means any human or animal material including, but not limited to, excreta, secreta, blood, and its components, tissue, and tissue fluids, being shipped for purposes of diagnosis.

(3) A "biological product" means a material prepared and manufactured in accordance with the provisions of 9 CFR Part 102 (Licensed veterinary biological products), 21 CFR Part 601 (Licensing), 21 CFR 312.1 (Conditions for exemption of new drugs for investigational use), 9 CFR Part 103 (Biological products for experimental treatment of animals), or 21 CFR 312.9 (New drugs for investigational use in laboratory research animals or in vitro tests), and which in accordance with these provisions, may be shipped in interstate commerce.

(b) The requirements of this subpart supplement the requirements of the Department of Health and Human Services contained in 42 CFR Part 72.

(c) Packing groups are not assigned to Division 6.2 materials.

§ 173.136 Class 8—Definitions.

(a) For the purpose of this subchapter, "corrosive material" (Class 8) means a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact, or a liquid that has a severe corrosion rate on steel or aluminum, in accordance with the following criteria:

(1) A material is considered to be destructive or to cause irreversible alteration in human skin tissue if, when tested on the intact skin of an albino rabbit by the technique described in Appendix A to this part, the structure of the tissue at the site of contact is destroyed or changed irreversibly after an exposure period of 4 hours or less.

(2) A liquid is considered to have a severe corrosion rate if its corrosion rate exceeds 6.25mm (0.246 inches) a year on steel (SAE 1020) or aluminum (nonclad 7075-T8) at a test temperature of 55 °C (131 °F). An acceptable test is described in NACE Standard TM-01-69.

(b) If human experience or other data indicate that the hazard of a material is greater or less than indicated by the results of the tests specified in paragraph (a) of this section, the Department may revise its classification or make the material subject to the requirements of this subchapter.

§ 173.137 Class 8—Assignment of Packing Group.

The packing group of Class 8 material is as indicated in Column 5 of the § 172.101 Table. When the § 172.101 Table provides more than one packing group for a hazardous material, the packing group shall be determined by applying the following criteria:

(a) *Packing Group I.* Substances that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of not more than 3 minutes.

(b) *Packing Group II.* Substances, other than those meeting Packing Group I criteria, that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of not more than 80 minutes.

(c) *Packing Group III.* Substances, other than those meeting Packing Group I or II criteria—

(1) That cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of not more than 4 hours; or

(2) Which have a corrosion rate on steel or aluminum surfaces exceeding 6.25 mm (0.246 inches) a year at a test temperature of 55 °C (131 °F).

§ 173.140 Class 9—Definitions.

(a) For the purpose of this subchapter, "miscellaneous hazardous material" (Class 9) means a material which presents a hazard during transport, but which is not included in any other hazard class. Included in this class is any material which has an anesthetic, noxious or other similar property which could cause extreme annoyance or discomfort to a flight crew member so as to prevent the correct performance of assigned duties.

§ 173.141 Class 9—Assignment of Packing Group.

The packing group of a Class 9 material is as indicated in Column 5 of the § 172.101 Table.

§ 173.144 Other Regulated Materials (ORM)—Definitions.

(a) For the purpose of this subchapter, "ORM-D material" means a material such as a consumer commodity which, though otherwise subject to the regulations of this subchapter, presents a limited hazard during transportation due to its form, quantity and packaging. It must be a material for which exceptions are provided in the § 172.101 Table. Each ORM-D material or category of ORM-D material is listed in the § 172.101 Table.

(b) For the purpose of this subchapter, "ORM-E material" means a material that is not included in any other hazard class, but is subject to the requirements of this subchapter because it meets the definition in § 171.8 of this subchapter for a hazardous substance or a hazardous waste.

§ 173.145 Other Regulated Materials—Assignment of Packing Group.

(a) The packing group of an ORM-E material is as indicated in Column 5 of the § 172.101 Table.

(b) Packing groups are not assigned to ORM-D materials.

§ 173.150 Exceptions for Class 3 (Flammable and combustible liquids).

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 Table of this subchapter and the material does not meet the definition of another hazard class.

(b) *Limited quantities.* Limited quantities of flammable liquids (Class 3) are excepted from labeling, unless offered or intended for transportation by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. In addition, shipments of limited quantities are not

subject to Subpart F (Placarding) of Part 172 of this subchapter. Each package must conform to the packaging requirements of Subpart B of this part and may not exceed 30 kilograms (66.1 pounds) gross weight. The following combination packagings are authorized.

(1) For flammable liquids in Packing Group I, inner packagings not over 0.5 liter (0.53 quart) net capacity each, packed in strong outer packagings;

(2) For flammable liquids in Packing Group II, inner packagings not over 1.0 liters (1.06 quarts) net capacity each, packed in strong outer packaging; and

(3) For flammable liquids in Packing Group III, inner packagings not over 4.0 liters (1.06 gallons) net capacity each, packed in strong outer packagings.

(c) *Consumer commodities.* A limited quantity which conforms to the provisions of paragraph (b) of this section and is a "consumer commodity" as defined in § 171.8 of this subchapter, may be renamed "Consumer commodity" and reclassified as ORM-D material. In addition to the exceptions provided by paragraph (b), shipments of ORM-D materials are not subject to the shipping paper requirements of Subpart C of Part 172, unless offered or intended for transportation by aircraft, and are eligible for the exceptions provided in § 173.156.

(d) *Alcoholic beverages.* Alcoholic beverages (wine and distilled spirits as defined in 27 CFR 4.10 and 5.11) in packagings of four liters or less are not subject to the requirements of this subchapter.

(e) *Aqueous solutions of alcohol.* An aqueous solution containing 24 percent or less alcohol by volume and no other hazardous material—

(1) May be reclassified as a combustible liquid; and

(2) Is not subject to the requirements of this subchapter if it contains no less than 50 percent water.

(f) *Combustible liquids.* (1) Except for transportation by vessel or aircraft, a flammable liquid with a flash point at or above 38 °C (100 °F) may be reclassified as a combustible liquid.

(2) Unless otherwise stated for a specific material, the requirements in this subchapter do not apply to a material classed as a combustible liquid in a non-bulk packaging unless the combustible liquid is a hazardous substance or a hazardous waste.

(3) A combustible liquid that is a hazardous substance or a hazardous waste, in a non-bulk packaging, and a combustible liquid in a bulk packaging is not subject to the requirements of this subchapter except those pertaining to:

(i) Shipping papers, waybills, switching orders, and hazardous waste manifests;

(ii) Marking of packages;

(iii) Display of identification numbers on bulk packages;

(iv) Placarding of bulk packagings;

(v) Carriage aboard aircraft and vessels (for packaging requirements for transport by vessel see § 176.340 of this subchapter);

(vi) Reporting incidents as prescribed by §§ 171.15, 171.16, and 171.17 of this subchapter;

(vii) Packaging requirements of Subpart B of this part; and

(viii) The requirements of §§ 173.1, 173.21, 173.24, 173.24a, 173.24b, 174.1, 177.804, 177.817, and 177.834 of this subchapter.

(4) A combustible liquid that is not a hazardous substance or a hazardous waste is not subject to the requirements of this subchapter if it is a mixture of one or more components that—

(i) Have a flash point at or above 93.30 °C (200 °F);

(ii) Comprise at least 99 percent of the volume of the mixture, and

(iii) Is not offered for transportation or transported as a liquid at a temperature at or above its flash point.

§ 173.151 Exceptions for Division 4.1 (flammable solids).

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 Table of this subchapter.

(b) *Limited quantities of Division 4.1 flammable solids.* Limited quantities of flammable solids (Division 4.1) in Packing Groups II and III are excepted from labeling, unless offered or intended for transportation by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. In addition, shipments of limited quantities are not subject to Subpart F (Placarding) of Part 172 of this subchapter. Each package must conform to the packaging requirements of Subpart B of this part and may not exceed 30 kilograms (66.1 pounds) gross weight. The following combination packagings are authorized:

(1) For flammable solids in Packing Group II, inner packagings not over 1.0 kilogram (2.20 pounds) net capacity each, packed in strong outer packagings; and

(2) For flammable solids in Packing Group III, inner packagings not over 5.0 kilograms (11.02 pounds) net capacity each, packed in strong outer packagings.

(c) *Consumer commodities.* A limited quantity which conforms to the provisions of paragraph (b) of this section, and charcoal briquettes in packagings not exceeding 30 kilograms (66.1 pounds) gross weight, may be renamed "Consumer commodity" and reclassified as ORM-D material, if the material is a "consumer commodity" as defined in § 171.8 of this subchapter. In addition to the exceptions provided by paragraph (b) of this section, shipments are not subject to the shipping paper requirements of Subpart C of Part 172, unless offered or intended for transportation by aircraft, and are eligible for the exceptions provided in § 173.156.

§ 173.152 Exceptions for Division 5.1 (oxidizers) and Division 5.2 (organic peroxides).

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 Table of this subchapter.

(b) *Limited quantities.* Limited quantities of oxidizers (Division 5.1) and organic peroxides (Division 5.2) in Packing Groups II and III are excepted from labeling, unless offered or intended for transportation by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. In addition, shipments of these limited quantities are not subject to Subpart F of Part 172 (Placarding) of this subchapter. Each package must conform to the packaging requirements of Subpart B of this part and may not exceed 30 kilograms (66.1 pounds) gross weight. The following combination packagings are authorized:

(1) For oxidizers in Packing Group II, inner packagings not over 1.0 liter (1.06 quarts) net capacity each for liquids or not over 1.0 kilogram (2.20 pounds) net capacity each for solids, packed in strong outer packagings.

(2) For oxidizers in Packing Group III, inner packagings not over 4.0 L (1.06 gallons) net capacity each for liquids or not over 5.0 kilograms (11.02 pounds) net capacity each for solids, packed in strong outer packagings.

(3) For organic peroxides in Packing Groups II and III, inner packagings not over 30 milliliters (1.0 ounce) net capacity for liquids or 30 grams (1.1 ounces) net capacity for solids, packed in strong outer packagings.

(c) *Consumer commodities.* A limited quantity which conforms to the provisions of paragraph (b) of this section and is a "consumer commodity" as defined in § 171.8 of this subchapter,

may be renamed "Consumer commodity" and reclassified as ORM-D material. In addition to the exceptions provided by paragraph (b), shipments are not subject to the shipping paper requirements of Subpart C of Part 172, unless offered or intended for transportation by aircraft, and are eligible for the exceptions provided in § 173.156.

§ 173.153 Exceptions for Division 6.1 (poisonous materials).

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 Table of this subchapter.

(b) *Limited quantities of Division 6.1 materials.* Limited quantities of poisonous materials (Division 6.1) in Packing Group III are excepted from the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. In addition, shipments of these limited quantities are not subject to Subpart F of Part 172 (Placarding) of this subchapter. Each package must conform to the packaging requirements of Subpart B of this part and may not exceed 30 kilograms (66.1 pounds) gross weight. The following combination packagings are authorized:

(1) For poisonous liquids, inner packagings not over 4.0 liters (1.06 gallons) net capacity each, packed in strong outer packagings; and

(2) For poisonous solids, inner packagings not over 5.0 kilograms (11.02 pounds) net capacity each, packed in strong outer packagings.

(c) *Consumer commodities.* The following provisions apply to consumer commodities:

(1) A limited quantity which conforms to the provisions of paragraph (b) of this section and is a "consumer commodity" as defined in § 171.8 of this subchapter, may be renamed "Consumer commodity" and reclassified as ORM-D material.

(2) A poisonous material which is a drug or medicine and is a "consumer commodity" as defined in § 171.8 of this subchapter, may be renamed "Consumer commodity" and reclassified as ORM-D material if packaged in a combination packaging not exceeding 30 kilograms (66.1 pounds) with inner packagings not over 250 milliliters (8.5 ounces) net capacity for liquids or 250 grams (8.8 ounces) net capacity for solids packed in strong outer packagings. Each package must conform to the packaging requirements of Subpart B of this part.

(3) Packages of ORM-D material are excepted from the specification packaging requirements of this subchapter and from the labeling requirements of Subpart E of Part 172. Shipments of ORM-D material are eligible for the exceptions provided in § 173.156 and in paragraph (b) of this section and are not subject to the shipping paper requirements of Subpart C of Part 172, unless offered or intended for transportation by aircraft.

§ 173.154 Exceptions for Class 8 (corrosive materials).

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 Table of this subchapter.

(b) *Limited quantities.* Limited quantities of corrosive materials (Class 8) in Packing Groups II and III are excepted from labeling, unless offered or intended for transportation by aircraft, and the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. In addition, shipments of these limited quantities are not subject to Subpart F (Placarding) of Part 172 of this subchapter. Each package must conform to the packaging requirements of Subpart B of this part and may not exceed 30 kilograms (66.1 pounds) gross weight. The following combination packagings are authorized:

(1) For corrosive materials in Packing Group II, in inner packagings not over 1.0 liters (1.06 quarts) net capacity each for liquids or not over 1.0 kilograms (2.2 pounds) net capacity each for solids, packed in strong outer packagings.

(2) For corrosive materials in Packing Group III, in inner packagings not over 4.0 liters (1.06 gallons) net capacity each for liquids or not over 5.0 kilograms (11.02 pounds) net capacity each for solids, packed in strong outer packagings.

(c) *Consumer commodities.* A limited quantity which conforms to the provisions of paragraph (b) of this section and is a "consumer commodity" as defined in § 171.8 of this subchapter may be renamed "Consumer commodity" and reclassified as ORM-D material. In addition to the exceptions provided by paragraph (b) of this section, shipments of ORM-D materials are not subject to the shipping paper requirements of Subpart C of Part 172, unless offered or intended for transportation by aircraft, and are eligible for the exceptions provided in § 173.156.

(d) *Materials corrosive to aluminum or steel only.* Except for a hazardous

substance or a hazardous waste, a material classed as a Class 8, Packing Group III, material solely because of its corrosive effect—

(1) On aluminum is not subject to any other requirements of this subchapter when transported by motor vehicle or rail car in a packaging constructed of materials that will not react dangerously with or be degraded by the corrosive material;

(2) On steel is not subject to any other requirements of this subchapter when transported by motor vehicle or rail car in a bulk packaging constructed of materials that will not react dangerously with or be degraded by the corrosive material.

§ 173.155 Exceptions for Class 9 (miscellaneous hazardous materials).

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 Table of this subchapter.

(b) *Limited quantities.* Limited quantities of miscellaneous hazardous materials (Class 9) are excepted from the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. In addition, shipments of these limited quantities are not subject to Subpart F (Placarding) of Part 172 of this subchapter. Each package must conform to the packaging requirements of Subpart B of this part and may not exceed 30 kilograms (66.1 pounds) gross weight. The following combination packagings are authorized:

(1) For liquids, inner packagings not over 4.0 liters (1.06 gallons) net capacity each, packed in strong outer packagings.

(2) For solids, inner packagings not over 5.0 kilograms (11.02 pounds) net capacity each, packed in strong outer packagings.

(c) *Consumer commodities.* A limited quantity which conforms to the provisions of paragraph (b) of this section and is a "consumer commodity" as defined in § 171.8 of this subchapter, may be renamed "Consumer commodity" and reclassified as ORM-D material. In addition to the exceptions provided by paragraph (b), shipments of ORM-D materials are not subject to the shipping paper requirements of Subpart C of Part 172, unless offered or intended for transportation by aircraft, and are eligible for the exceptions provided in § 173.156.

§ 173.156 Exceptions for ORM materials.

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this

section is referenced for the specific hazardous material in the § 172.101 Table or in a packaging section in this part.

(b) *ORM-D.* Packagings for ORM-D materials are specified according to hazard class in §§ 173.150 through 173.155 and in § 173.306. In addition to other exceptions specified for ORM-D materials in this part, strong outer packagings as specified in this part and the marking requirements specified in § 172.316 of this subchapter are not required for materials classed as ORM-D when unitized in cages, carts or similar overpacks and when transported by a private or contract motor carrier from a distribution center to a retail outlet.

(c) *ORM-E.* Limited quantities of ORM-E materials are excepted from the specification packaging requirements of this subchapter when packaged according to this paragraph. Each package must conform to the packaging requirements of Subpart B of this part and may not exceed 30 kilograms (66.1 pounds) gross weight. The following combination packagings are authorized:

(1) For liquids, inner packagings not over 4.0 liters (1.06 gallons) net capacity each, packed in strong outer packagings; and

(2) For solids, inner packagings not over 5.0 kilograms (11.02 pounds) net capacity each, packed in strong outer packagings.

Subpart E—Non-Bulk Packaging for Hazardous Materials Other Than Class 1 and Class 7

§ 173.158 Nitric Acid.

(a) Nitric acid exceeding 40 percent concentration may not be packaged with any other material.

(b) Nitric acid in any concentration which does not contain sulfuric acid or hydrochloric acid as impurities, when offered for transportation by rail, highway, or water shall be packaged in specification containers as follows:

(1) 1A1 stainless steel drums are authorized, subject to the following limitations:

(i) Stainless steel used in drums must conform to the following thicknesses:

Nominal (marked) capacity (in liters) of 1A1 drum	Minimum thickness (in millimeters) of stainless steel
55	0.9
115	1.2
210	1.5
450	2.0

(ii) Drums weighing less than 85 percent of their original tare weight may not be used.

(iii) Type 304 or other grades of equivalent corrosion-resistant steels in the as-welded condition are permissible for nitric acid concentrations up to and including 78 percent.

(iv) For all concentrations of nitric acid, the following are permissible:

(A) Type 304 heat-treated (quenched in water at 1900°F.), or

(B) Stabilized Type 347 in the as-welded condition, or

(C) Stabilized Type 347 stress-relieved (1550–1650°F.), or

(D) Stabilized Type 347 heat-treated (quenched in water at 1900°F.), or

(E) Other grades of equivalent corrosion resistance.

(v) All parts of drum exposed to lading must be capable of withstanding the corrosive effect of nitric acid to the extent that 65 percent boiling nitric acid does not penetrate the metal more than 0.0381 mm (0.0015 inch) per month. (ASTM A 262 may be used for a suitable corrosion test procedure.)

(vi) In addition to marking required by § 178.503 of this subchapter, the following marks, in lettering of at least $\frac{1}{2}$ inch (12.7 mm) height, must be placed on drums used to transport nitric acid:

(A) The type of steel used in body and head sheets as identified by American Iron and Steel Institute type number, and, in addition, the letters HT following the steel designation on containers subject to stress relieving or heat treatment during manufacture.

(B) The thickness in millimeters of metal in thinnest part. When the thickness of metal in the body differs from that in the head, both must be indicated with slanting line between and with the gauge of the body indicated first.

(C) Original tare weight in kilograms, preceded by the letters "TW."

An example of the markings required by paragraph (b)(1)(vi) (A), (B), and (C) of this section "304HT/1.9/2.7/TW55."

(2) 4H1 expanded plastics outer packagings with glass inner receptacles of not greater than 2.5 liters (2.64 quarts) capacity each. No more than four 2.5 liter inner receptacles may be packed in one outer packaging.

(c) Nitric acid of 80 percent or greater concentration which does not contain sulfuric acid or hydrochloric acid as impurities, when offered for transportation by rail, highway, or water may be packaged in 1B1 aluminum drums.

(d) Nitric acid of 90 percent or greater concentration, when offered for transportation by rail, highway, or water

may be packaged in 4C1, 4C2, 4D or 4F wooden boxes with inner packagings consisting of glass bottles further individually overpacked in tightly closed metal packagings. Glass bottles must be of 2.5 liters (2.64 quarts) or less capacity and cushioned within the metal packagings.

(e) Nitric acid of less than 90 percent concentration, when offered for transportation by rail, highway, or water may be packaged in 4C1, 4C2, 4D or 4F wooden boxes with inside glass packagings of not over 2.5 liters (2.64 quarts) capacity each.

(f) Nitric acid of 70 percent or less concentration, when offered for transportation by rail, highway, or water, may be packaged as follows:

(1) In composite packagings 6PA1, 6PA2, 6PB1, 6PB2, 6PC, 6PD1, 6PH1, or 6PH2.

(2) In 4H1 expanded plastic boxes with inner glass packagings of not over 2.5 liters (2.64 quarts) each.

(g) Nitric acid of more than 70 percent concentration, when offered for transportation by cargo aircraft only, must be packaged in combination packagings with 1A2, 1B2, 1D, 1G, 1H2, 3H2, 4C1, 4C2, 4D, 4F or 4G outer packagings with glass or earthenware inner packagings of not over 1 liter (2.11 pints) or glass ampoules of not over 0.5 liter (1.06 pints).

(h) Nitric acid of less than 70 percent concentration, when offered for transportation in cargo aircraft only must be packaged in combination packagings with 1A2, 1B2, 1D, 1G, 1H2, 3H2, 4C1, 4C2, 4D, 4F or 4G outer packagings with inner packagings of—

(1) Glass or earthenware not over 2.5 liter (2.64 quarts) capacity;

(2) Plastic not over 2.5 liter (2.64 quarts) capacity; or

(3) Glass ampoule not over 0.5 liter (1.06 pints) capacity.

§ 173.159 Batteries, wet.

(a) Electric storage batteries, containing electrolyte acid or alkaline corrosive battery fluid, must be completely protected so that short circuits will be prevented; they may not be packed with other materials except as provided in §§ 173.220 and 173.222 of this part and paragraphs (h) and (i) of this section.

(b) The following specification packagings are authorized for batteries packed without other materials:

(1) 4C1, 4C2, 4D, or 4F wooden boxes.

(2) 4G fiberboard boxes.

(c) The following non-specification packagings are authorized for batteries packed without other articles:

(1) Electric storage batteries protected against short circuits and firmly secured

to skids or pallets capable of withstanding the shocks normally incident to transportation, are authorized for transportation by rail, highway, or water. The height of the completed unit must not exceed 1½ times the width of the skid or pallet. The unit must be capable of withstanding, without damage, a superimposed weight equal to two times the weight of the unit or, if the weight of the unit exceeds 2,000 pounds (907.2 kg), a superimposed weight of 4,000 pounds (1814.4 kg). Battery terminals must not be relied upon to support any part of the superimposed weight.

(2) Electric storage batteries weighing 500 pounds (226.8 kg) or more, consisting of carriers' equipment, may be shipped by rail when mounted on suitable skids and protected against short circuits. Such shipments must not be offered in interchange service.

(3) One to three batteries not over 25 pounds (11.3 kg) each packed in outer boxes. The maximum authorized gross weight is 75 pounds (34.0 kg).

(4) Not more than four batteries not over 15 pounds (6.8 kg) each, packed in strong outer fiberboard or wooden boxes. Batteries must be securely cushioned and packed to prevent short circuits. The maximum authorized gross weight is 65 pounds (29.5 kg).

(5) Not more than five batteries not over 10 pounds (4.5 kg) each, packed in strong outer fiberboard or wooden boxes. Batteries must be securely cushioned and packed to prevent short circuits. The maximum authorized gross weight is 65 pounds (29.5 kg).

(6) Single batteries not exceeding 75 pounds (34.0 kg) each, packed in 5-sided slipcovers or in completely closed fiberboard boxes. Slipcovers and boxes must be of solid or double-faced corrugated fiberboard of at least 200 pounds (90.7 kg) Mullen test strength. The slipcover or fiberboard box must fit snugly and provide inside top clearance of at least $\frac{1}{2}$ inch (1.27 cm) above battery terminals and filler caps with reinforcement in place. Assembled for shipment, the bottom edges of the slipcover must come to within one inch (2.54 cm) of the bottom of the battery. The completed package (battery and box or slipcover) must be capable of withstanding a top-to-bottom compression test of at least 500 pounds (226.8 kg) without damage to battery terminals, cell covers or filler caps.

(d) Nonspillable wet electric storage batteries capable of withstanding the following two tests without leakage of battery fluid are excepted from all other requirements of this subchapter when

protected against short circuits and securely packaged:

(1) **Vibration test.** The battery must be rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (0.03 inch), with a 1.6 mm (0.06 mm) maximum total excursion must be applied. The frequency must be varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return must be traversed in 95 ± 5 minutes for each mounting position (direction of vibrator) of the battery. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

(2) **Pressure differential test.** Following the vibration test, the battery must be stored for six hours at $24^{\circ}\text{C} \pm 4^{\circ}\text{C}$ ($75.2^{\circ}\text{F} \pm 7.2^{\circ}\text{F}$) while subjected to a pressure differential of at least 88 kPa [12.8 psi]. The battery must be tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

(e) Electric storage batteries containing electrolyte or corrosive battery fluid are not subject to the requirements of this subchapter for carriage by highway or rail if all of the following requirements are met:

(1) No other hazardous materials may be transported in the same vehicle;

(2) The batteries must be loaded or braced so as to prevent damage and short circuits in transit;

(3) Any other material loaded in the same vehicle must be blocked, braced, or otherwise secured to prevent contact with or damage to the batteries, and

(4) The transport vehicle may not carry material shipped by any person other than the shipper of the batteries.

(f) Electric storage batteries, containing electrolyte or corrosive battery fluid in a coil from which it is injected into the battery cells by a gas generator and initiator assembled with the battery, and which are nonspillable under the criteria of paragraph (d) of this section, are excepted from other requirements of this subchapter when examined by the Bureau of Explosives and approved by the Director, OHMT.

(g) Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries wet or dry, must be packed in one of the following specification packagings:

(1) In 4C1, 4C2, 4D, or 4F wooden boxes with inner receptacles of glass, not over 4.0 liters (1.06 gallons) each with not over 8.0 liters (2.11 gallons) total in each outside container. Inside containers must be well-cushioned and

separated from batteries by a strong solid wooden partition. The completed package must conform to Packing Group III requirements.

(2) Electrolyte, acid, or alkaline corrosive battery fluid included with storage batteries and filling kits may be packed in strong plywood or wooden boxes when shipments are made by, or to the Departments of the Army, Navy, or Air Force of the United States. Packagings must conform to military specifications. The electrolyte, acid, or alkaline corrosive battery fluid must be packed in polyethylene bottles of not over 1.0 liter (1.06 quarts) capacity each. Not more than 24 bottles, securely separated from storage batteries and kits, may be shipped in each package.

(3) In 4G fiberboard boxes with not more than 12 inside packagings of polyethylene or other material resistant to the lading, each not over 2.0 liters (2.11 quarts) capacity each. Completed packages must conform to Packing Group III requirements. Inner packagings must be adequately separated from the storage battery. The maximum authorized gross weight is 65 pounds (29.5 kg). These packages are not authorized for transportation by aircraft.

(h) Dry storage batteries or battery charger devices may be packaged in 4G fiberboard boxes with inner receptacles containing battery fluid. Completed packagings must conform to Packing Group III requirements. Not more than 12 inner receptacles may be packed in one outer box. The maximum authorized gross weight is 75 pounds (34.0 kg).

§ 173.160 Bombs, smoke, non-explosive (corrosive).

Bombs, smoke, non-explosive, may be shipped provided they are without ignition elements, bursting charges, detonating fuses or other explosive components. They must be packaged in wooden (4C1, 4C2), plywood (4D) or reconstituted wood (4F) boxes, or plywood drums (1D), which meet Packing Group II requirements.

§ 173.161 Chemical kits.

(a) Except as otherwise provided, chemical kits must be packed, marked, and labeled as prescribed by this subchapter for the specific corrosive materials contained therein.

(b) Chemical kits containing limited quantities of corrosive liquids in inner receptacles of not over 8 fluid ounces (177.4 mL) capacity each are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter if all of the following requirements are met:

(1) The kit may contain only corrosive liquids for which packaging exceptions are provided in the § 172.101 table.

(2) The kit must be a strong wooden or metal outer packaging, or must be packed in a strong wooden or metal packaging.

(3) The corrosive liquids must be cushioned with sufficient absorbent material to completely absorb the contents of the individual containers, and must be protected from damage by other materials in the kit.

(4) The contents of the kit must be of a nature and packed so there will be no possibility of the mixture of contents causing dangerous evolution of heat or gas.

In addition, these shipments are not subject to Subpart F of Part 172 of this subchapter (Placarding), to Part 174 (Carriage by rail) of this subchapter except § 174.24 (Shipping papers) and to Part 177 (Carriage by highway) of this subchapter except § 177.817 (Shipping papers).

(c) Except as provided in paragraph (b) of this section, chemical kits must be packed in 4G fiberboard boxes with inner glass receptacles of not over one liter (1.06 quart) capacity each, securely cushioned and separated from other inside containers. The contents of the kit must be of such a nature and so packed that there will be no possibility of the mixture of contents causing dangerous evolution of heat or gas.

§ 173.162 Gallium.

Gallium metal must be packaged in packagings intended to contain liquids consisting of semi-rigid plastic inner packagings of not more than 2.5 kg (5.51 pounds) net capacity each, individually enclosed in a sealed leak-tight bag of strong puncture-resistant material. The sealed bags must be packed in wooden (4C1, 4C2), plywood (4D), reconstituted wood (4F), fiberboard (4G) or plastic (4H1, 4H2) boxes or in fiber (1G) or steel (1A2) drums, which are lined with leak-tight, puncture-resistant material. Bags and liner material must be chemically resistant to gallium. If it is desired to maintain the gallium in a completely solid state, the above packaging may be overpacked in a strong, water-resistant outer packaging which contains dry ice or other means of refrigeration. If a refrigerant is used, all of the above materials used in the packaging of gallium must be chemically and physically resistant to the refrigerant and must have impact resistance at the low temperatures of the refrigerant employed. If dry ice is used, the outer packaging must permit the release of carbon dioxide gas. Completed

packaging must meet Packing Group I requirements for transportation by aircraft and Packing Group III requirements for transportation by vessel.

§ 173.163 Hydrogen fluoride.

Hydrogen fluoride (hydrofluoric acid, anhydrous) must be shipped in Specification 3, 3A, 3AA, 3B, 3C, 3E, 4, 4A, 25, or 38 cylinders; or Specification 4B, 4BA, 4BW or 4C cylinders, if they are not brazed. Filling density must not exceed 85 percent of the water weight capacity of the cylinder. Cylinders used exclusively in this service may, in lieu of the periodic hydrostatic retest required by § 173.34(e), be given a complete external visual inspection as described in CGA Pamphlet C-6, at the time such periodic retest becomes due. Such inspections shall be made on cylinders cleaned to bare metal. The results shall be recorded on a data sheet, completed copies of which shall be kept as prescribed in § 173.34(e)(5). Items which must be checked and recorded on these data sheets are: Date of inspection (month and year); DOT specification number; cylinder identification (registered symbol and serial number, date of manufacture, and if needed for adequate identification, ownership symbol); tare weight; physical condition (record specifically any leakage, corrosion, gouges, dents or digs in shell or heads, broken or damaged footring or protective ring or fire damage); disposition of cylinders (returned to service, to cylinder manufacturer for repairs, or scrapped). A cylinder which passes the inspection prescribed shall have the data recorded in the manner presently prescribed for the recording of the retest date except that an "E" is to follow the date (month and year) indicating requalification by the external inspection method. Cylinders removed from this service for any reason must be rendered unfit for any other regulated service.

§ 173.164 Mercury (metallic and articles containing mercury).

(a) For transportation by aircraft, mercury shall be packaged in packagings which meet the requirements of Part 178 at the Packing Group I performance level, as follows:

(1) In earthenware or glass or suitable plastic inner packagings of not more than 250 mL (8.5 ounces) capacity each, packed in steel drums (1A2), steel jerricans (3A2), wooden (4C1, 4C2), plywood (4D), fiberboard (4G) or reconstituted wood (4F) boxes, plywood drums (1D) or fiber drums (1G) with sufficient cushioning material to prevent breakage. Either the inner packagings or

the outer packagings must have inner linings or bags of strong leakproof and puncture-resistant material impervious to mercury, completely surrounding the contents, which will prevent the escape of mercury from the package irrespective of its position

(2) Iron or steel 'quicksilver flasks' packaged in steel drums (1A2), steel jerricans (3A2), wooden (4C1, 4C2), plywood (4D), fiberboard (4G) or reconstituted wood (4F) boxes, plywood drums (1D) or fiber drums (1G) with leakproof linings as in subparagraph (1) of this paragraph.

(3) In welded steel bottles with inner vaulted bottoms as single packagings. The closure must be a bolt with a conical thread, and the opening must not exceed 20 mm (0.8 inches). The maximum net mass must not exceed 35 kg (77.2 pounds).

(b) Manufactured articles or apparatuses containing mercury are excepted from the specification packaging requirements of this subchapter, when packaged as follows:

(1) Manufactured articles or apparatuses of which metallic mercury is a component part, such as manometers, pumps, thermometers, switches, etc. (for electron tubes, mercury vapor tubes and similar tubes, see paragraph (b)(2) of this section), must be in strong outer packagings, having sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury, which will prevent the escape of mercury from the package irrespective of its position. Mercury switches and relays are excepted from these requirements, if they are of the totally enclosed leakproof type in sealed metal or plastic units. Thermometers, switches and relays, each containing a total quantity of not more than 15 g (0.5 ounces) of mercury, are also excepted if installed as an integral part of a machine or apparatus and so fitted that shock of impact damage, leading to leakage of mercury, is unlikely to occur under conditions normally incident to transport;

(2) Electron tubes, mercury vapor tubes and similar tubes must be packaged as follows:

(i) Tubes which are packed in strong outer packagings with all seams and joints sealed with self-adhesive, pressure-sensitive tape which will prevent the escape of mercury from the package, are authorized up to a total net quantity of 450 g (15.9 ounces) of mercury per package;

(ii) Tubes with more than 450 g (15.9 ounces) of mercury are authorized only when packed in strong outer packagings,

having sealed inner liners or bags of strong leakproof and puncture-resistant material impervious to mercury which will prevent escape of mercury from the package irrespective of its position;

(iii) Tubes which do not contain more than 5 g (0.2 ounce) of mercury each and which are packed in the manufacturer's original packagings, are authorized up to a total net quantity of 30 g (1.1 ounces) of mercury per package;

(iv) Tubes which are completely jacketed in sealed leakproof metal cases are authorized in the manufacturer's original packagings;

(3) For electron tubes, mercury vapor tubes, and similar tubes, the shipper must indicate the quantity of mercury on the shipping paper.

(4) Mercurial barometers conforming to paragraph (b)(1) of this section, which are loaded and unloaded from an aircraft under the supervision of, and accompanied in flight by, a National Weather Service official or similar United States agency official, are excepted from any other requirements of this subchapter.

(c) For transportation by other than aircraft, mercury shall be packaged—

(1) In any packaging which meets the requirements of Part 178 at the Packing Group III performance level; or

(2) In non-specification reusable metal packagings.

(d) Except for a hazardous substance or a hazardous waste or for transportation by aircraft or vessel, packages containing less than 1.0 pound (0.45 kg) net weight of mercury are not subject to the requirements of this subchapter.

§ 173.171 Smokeless powder for small arms.

Smokeless powder for small arms may be classed as a flammable solid, for transportation by highway and rail only, subject to the following conditions:

(a) The smokeless powder must be examined for this classification by the Bureau of Explosives and approved by the Director, OHMT;

(b) The total quantity of smokeless powder in one railcar or motor vehicle may not exceed 100 pounds (45.4 kg) net mass; and

(c) Only combination packagings with inner packagings not exceeding 8 pounds (3.6 kg) net mass are authorized. Inner packagings must be arranged and protected so as to prevent simultaneous ignition of the contents. The complete package must be a type examined by the Bureau of Explosives and approved by the Director, OHMT.

§ 173.172 Aircraft hydraulic power unit fuel tank.

(a) Aircraft hydraulic power unit fuel tanks containing a mixture of anhydrous hydrazine and monomethyl hydrazine (M86 fuel) and designed for installation as complete units in aircraft are excepted from the specification packaging requirements of this subchapter when they conform to either of the following conditions:

(1) The unit must consist of an aluminum pressure vessel made from tubing and having welded heads. Primary containment of the fuel within this vessel must consist of a welded aluminum bladder having a maximum internal volume of 46L (12.2 gallons). The outer vessel must have a minimum design gauge pressure of 1,275 kPa (184.9 psi) and a minimum burst gauge pressure of 2,755 kPa (399.48 psi). Each vessel must be leak-checked during manufacture and before shipment and must be found leakproof. The complete inner unit must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42L (11.1 gallons); or

(2) The unit must consist of an aluminum pressure vessel. Primary containment of the fuel within this vessel must consist of a welded hermetically sealed fuel compartment with an elastomeric bladder having a maximum internal volume of 46L (12.2 gallons). The pressure vessel must have a minimum design gauge pressure of 5,170 kPa (749.8 psi). Each vessel must be leak-checked during manufacture and before shipment and must be securely packed in non-combustible cushioning material, such as vermiculite, in a strong outer tightly closed metal packaging which will adequately protect all fittings. Maximum quantity of fuel per unit and package is 42L (11.1 gallons).

§ 173.173 Paint, paint-related material, adhesives, and ink.

(a) Except as otherwise provided in this part, the description "Paint" is the proper shipping name for paint, lacquer, enamel, stain, shellac, varnish, liquid aluminum, liquid bronze, liquid gold, liquid wood filler, and liquid lacquer base. The description "Paint-related material" is the proper shipping name for a paint thinning, reducing or removing compound. However, if a more specific description is listed in the § 172.101 Table of this subchapter, that description must be used.

(b) Paint, paint-related material, adhesives, and ink must be packaged as follows:

(1) As prescribed in § 173.202 of this part if it is a Packing Group II material or § 173.203 of this part if it is a Packing Group III material.

(2) In inner glass packagings of not over one liter capacity each or inner metal packagings of not over 5 liters each, packed in a strong outer packaging. Packages must conform to the packaging requirements of Subpart B of this part but need not conform to the requirements of Part 178 of this subchapter.

§ 173.174 Refrigerating machines.

A refrigerating machine assembled for shipment and containing 15 pounds (6.8 kg) or less of a flammable liquid for its operation in a strong, tight receptacle is excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments are not subject to Subpart F of Part 172 of this subchapter (Placarding), to Part 174 of this subchapter (Carriage by rail) except § 174.24 (Shipping papers) and to Part 177 (Carriage by highway) of this subchapter except § 177.817 (Shipping papers).

§ 173.180 Aircraft thrust devices.

(a) Aircraft thrust devices for assisted take-off and their igniters must be of a type examined by the Bureau of Explosives and approved by the Director, OHMT. They must be properly marked and must be shipped in an inoperable condition, and must be packaged as authorized in paragraph (b) of this section.

(b) Devices must be packed in outer wooden (4C1, 4C2), plywood (4D) or reconstituted wood (4F) boxes with one of the following inner packaging provisions:

(1) Aircraft thrust devices only;

(2) Igniters for aircraft thrust devices only packed in sealed metal inner packagings; or,

(3) Aircraft thrust devices together with igniters in same outer packaging provided igniters are packed separately. Igniters must be packed in strong inner packagings and then in separate sealed metal packagings.

§ 173.181 Pyrophoric materials (liquids).

When the § 172.101 Table specifies that a hazardous material be packaged under this section, only the following non-bulk packagings are authorized:

(a) Specification steel or nickel cylinders prescribed for any compressed gas except acetylene having a minimum design pressure of 175 psi (1206.6 kPa). Cylinders with valves must be:

(1) Equipped with steel valve protection caps or collars, unless overpacked; or

(2) Overpacked in a wooden box (4C1, 4C2, 4D or 4F); fiberboard box (4G), or plastic box (4H1 or 4H2). Cylinders must be secured to prevent movement in the box and, when shipped, must be so loaded that pressure relief devices remain in the vapor space of the cylinder. (See §§ 173.34(d)(7), 174.300(d) and 177.837(d) of this subchapter.)

(b) Wooden boxes (4C1, 4C2, 4D or 4F) or fiberboard boxes (4G) enclosing not more than four strong, tight metal cans with inner receptacles of glass or metal, not over one liter (1.06 quarts) capacity each, having positive screwcap closures adequately gasketed. Inner packagings must be cushioned on all sides with dry, absorbent, incombustible material in a quantity sufficient to absorb the entire contents. The strong, tight metal cans must be closed by positive means, not by friction.

(c) Steel drums (1A2) not exceeding 220 liters (58.1 gallons) capacity each with inner metal cans not over 4.0 liters (1.06 gallons) capacity each, constructed of not less than 28 gauge (0.0149 inch (0.3785 mm) nominal thickness) electro-coated tin plate closed by positive means, not friction.

(1) Inner packagings must have no opening exceeding 26 mm (1.0 inches) diameter and must be surrounded with noncombustible cushioning material.

(2) Net quantity of pyrophoric liquids may not exceed two-thirds of the rated capacity of the outer drum. For example, a 220 liter (58.1 gallon) outer drum may contain no more than 147 liters (38.8 gallons) of pyrophoric liquids.

(3) Each layer of inner containers must be separated by a tin plate separator in addition to cushioning material.

§ 173.182 Barium azide—50 percent or more water wet.

Barium azide—50 percent or more water wet, must be packed in wooden boxes (4C1, 4C2, 4D, or 4F) or fiber drums (1G) with inner glass packagings not over 0.5 kg (1.1 pounds) capacity each. Packagings must have rubber stoppers wire tied for securement. If shipment is to take place at a time freezing weather is anticipated, a suitable antifreeze solution must be used to prevent freezing. Each packaging must conform to the requirements of Part 178 of this subchapter at the Packing Group I performance level.

§ 173.183 Nitrocellulose base film.

Films, nitrocellulose base, must be packaged in packagings conforming to

the requirements of Part 178 of this subchapter at the Packing Group III performance level, as follows:

(a) In steel drums (1A2), aluminum drums (1B2), steel jerricans (3A2), wooden (4C1, 4C2), plywood (4D) or reconstituted wood (4F) boxes or plywood drums (1D) with each reel in a tightly closed metal can or strong cardboard or fiberboard inner packaging with cover held in place by adhesive tape or paper; or

(b) In fiberboard (4G) boxes or fiber drums (1G) with a single tightly closed metal can or strong cardboard or fiberboard inner packaging with cover held in place by adhesive tape or paper; authorized only for not over 600 m (1968.5 ft.) of film.

§ 173.184 Highway or rail fusee.

(a) A fusee is a device designed to burn at a controlled rate and to produce visual effects for signaling purposes. The composition of the fusee must be such that the fusee will not ignite spontaneously or undergo marked decomposition when subjected to a temperature of 75 °C (167 °F) for 48 consecutive hours.

(b) Fusees (highway and railway) must be packaged in steel drums (1A2), steel jerricans (3A2), wooden (4C1, 4C2), plywood (4D) or reconstituted wood (4F) boxes or in fiberboard boxes (4G), plywood (1D) or fiber (1G) drums. If the fusees are equipped with spikes, packagings must have reinforced ends to prevent penetration of spikes through the outer packagings; packages must be capable of passing drop test requirements (§ 178.603 of this subchapter), including at least one drop with spike in a downward position, and other requirements of Part 178 of this subchapter, at the Packing Group II performance level.

§ 173.185 Lithium batteries and cells.

(a) Except as provided in paragraphs (i) and (j) of this section, lithium cells and batteries, containing only metallic lithium and vanadium pentoxide, manganese dioxide, monofluorographite, sulfur dioxide, lithium bromide salts, acetonitrile, propylene carbonate, thionyl chloride, sulphuryl chloride, chlorine poly-carbon monofluoride, lithium tetrachloroaluminate, lithium perchlorate, or lithium tetrafluoroborate, are authorized for transportation when packaged in accordance with paragraphs (b) through (g) and tested in accordance with paragraph (h) of this section. Other types of lithium cells, batteries, and devices containing lithium batteries, must be transported by methods approved by the Director, OHMT

(b) No cell may contain more than 12 grams (0.42 ounces) of lithium or lithium alloy.

(c) Each cell and battery must be equipped with an effective means of preventing external short circuits.

(d) Each cell and battery must incorporate a safety venting device or be designed in a manner that will preclude a violent rupture when subject to an incident in transportation, such as a dead short.

(e) Batteries containing cells or series of cells connected in parallel must be equipped with diodes to prevent reverse current flow.

(f) Except as provided in paragraph (j) of this section, cells or batteries may not be offered for transportation or transported if any cell has been discharged to the extent that the open circuit voltage is less than two volts or is less than $\frac{1}{2}$ of the voltage of the fully charged cell whichever is less.

(g) Lithium cells and batteries must be packaged in packagings conforming to the requirements of Part 178 of this subchapter at the Packing Group II performance level, as follows:

(1) In strong inner fiberboard packagings containing not more than 500 grams (1.10 pounds) of lithium per inner packaging.

(2) For shipment by water, rail or highway, inner packagings must be packed within a wooden box (4C1, 4C2, 4D, or 4F), fiberboard box (4G), fiber drum (1G), or metal drum (1A2 or 1B2).

(3) For shipment by cargo-only aircraft, the inner packaging must be packed in a steel drum (1A2) with a gas tight gasket. The maximum gross weight of the package must not exceed 35 kg (77.18 pounds).

(4) When the outer packaging is a metal drum, inner packagings must be separated from each other and from the outer packaging by at least 25 mm (one inch) of non-combustible cushioning material.

(h) Lithium batteries and cells must be tested as follows:

(1) The cell or battery must be subjected to a thermal stability test at 75 °C (167.0 °F) for 48 hours and must show no evidence of distortion, leakage or internal heating. This test must be performed on at least 10 cells and 1 battery of each type taken from each week's production, or as otherwise approved by the Director, OHMT.

(2) Under application of a direct short, the cell or battery must be rendered inert, preferably without venting (through the use of internal fusing devices). If venting does occur, an open flame must be applied to the venting fumes to prove that an explosive condition does not exist. This test must

be performed on at least 3 cells and 1 battery of each type taken from each week's production, or as otherwise approved by the Director, OHMT.

(3) Cells containing no more than 12 grams of lithium metal and also containing lithium molybdenum disulfide and lithium hexafluoroarsenate or vanadium pentoxide, polycarbonmonofluoride, manganese dioxide, titanium disulfide, thionyl chloride and lithium tetrachloroaluminate, lithium tetrafluorobonate or acetonitrile and sulfur dioxide, or thionyl chloride/bromine complex or sulphuryl chloride and chlorine which are hermetically sealed, and batteries constructed of such cells, are excepted from the tests in paragraphs (h) (1) and (2) of this section, and the requirement to use a 1A2 steel drum for transportation by cargo aircraft only as an outer packaging provided that:

(i) The outer packaging conforms to paragraph (g)(2) of this section; and

(ii) Prior to the first shipment, 10 cells or 4 batteries of each type to be offered for transportation, or as otherwise approved by the Director, OHMT, must be tested as follows, without showing any evidence of out-gassing, leakage, loss of weight or distortion:

(A) The cells or batteries must be stored for 6 hours at an absolute pressure of 11.6 kPa (1.68 psi) and a temperature of 24 °C ± 4 °C; (75.2 °F ± 7.2 °F);

(B) The cells or batteries must then be subjected to the thermal stability test at 75 °C (167 °F) for 48 hours as required in paragraph (h)(1) of this section;

(C) The cells or batteries must be rigidly clamped to the platform of a vibration machine. A simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) must be applied. The frequency must be varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return must be traversed in 95 ± 5 minutes for each of three mutually perpendicular mounting positions of the battery and two perpendicular positions of the cells. One of the directions of vibration must be perpendicular to the terminal face of the battery or cell. Open circuit voltage must be observed for 30 seconds during the last quarter of each vibration period. Periodic retesting is not required;

(D) The battery must be secured to a shock testing machine by means of a rigid mount which will support all mounting surfaces of the battery. Each battery must be subjected to a total of three shocks of equal magnitude. The shocks must be applied in each of three

mutually perpendicular directions. Each shock must be applied in a direction normal to a face of the battery. For each shock, the battery must be accelerated in such a manner that during the first 3 milliseconds the minimum average acceleration is 75 g (where g is the local acceleration due to gravity). The peak acceleration must be between 125 g and 175 g.

(i) Lithium batteries comprised of one or more cells are not subject to the requirements of this subchapter, if they meet the following requirements:

(1) Each cell may contain no more than 0.5 gram of lithium or lithium alloy.

(2) Each battery may contain an aggregate quantity of no more than 1 gram of lithium or lithium alloy.

(3) Each cell must be hermetically sealed.

(4) Cells must be separated so as to prevent short circuits.

(5) Batteries must be packed in strong outer packagings except when installed in electronic devices.

(6) If a battery contains more than 0.5 gram of lithium or lithium alloy, it may not contain a liquid or gas that is a hazardous material according to this subchapter unless the liquid or gas, if free, would be completely absorbed or neutralized by other materials in the battery.

(j) Lithium batteries, for disposal, comprised of one or more cells, may be offered for transportation to a permitted storage facility and disposal site by motor vehicle only, if the battery—

(1) When new, contained not more than 12.0 grams (0.42 ounce) of lithium per cell;

(2) Is equipped with an effective means of preventing external short circuits; and

(3) Is packed in a strong outer packaging conforming to the requirements of §§ 173.24 and 173.24a. The packaging need not conform to Part 178 performance requirements.

§ 173.186 Matches.

(a) Matches must be of a type which will not ignite spontaneously or undergo marked decomposition when subjected for 8 consecutive hours to a temperature of 93.3 °C (200 °F).

(b) *Definitions.* (1) "Fusee matches" are matches the heads of which are prepared with a friction sensitive igniter composition and a pyrotechnic composition which burns with little or no flame, but with intense heat.

(2) "Safety matches" are matches combined with or attached to the box, book or card that can be ignited by friction only on a prepared surface.

(3) "Strike anywhere" matches are matches that can be ignited by friction on a solid surface.

(4) "Wax 'Vesta' matches" are matches that can be ignited by friction either on a prepared surface or on a solid surface.

(c) Safety matches and wax "Vesta" matches must be tightly packed in securely closed inner packagings to prevent accidental ignition under conditions normally incident to transportation, and further packed in outer fiberboard, wooden, or other equivalent-type packagings. These matches in outer packagings not exceeding 50 pounds (22.7 kg) gross weight are not subject to any other requirement (except marking) of this subchapter. These matches may be packed in the same outer packaging with materials not subject to this subchapter.

(d) Strike anywhere matches may not be packed in the same outer packaging with any material other than safety matches or wax "Vesta" matches, which must be packed in separate inner packagings.

(e) Packagings. Strike anywhere matches must be tightly packed in securely closed chipboard, fiberboard, wooden, or metal inner packagings to prevent accidental ignition under conditions normally incident to transportation. Each inner packaging may contain no more than 700 strike anywhere matches and must be packed in outer steel drums (1A2), aluminum drums (1B2), steel jerrycans (3A2), wooden (4C1, 4C2), plywood (4D), reconstituted wood (4F) or fiberboard (4G) boxes, plywood (1D) or fiber (1G) drums. Gross weight of fiberboard boxes (4G) must not exceed 60 pounds (27.2 kg). Gross weight of other outer packagings must not exceed 100 pounds (45.4 kg).

§ 173.187 Pyrophoric solids, metals or alloys, n.o.s.

Packagings for pyrophoric solids, metals, or alloys, n.o.s. must conform to the requirements of Part 178 of this subchapter at the packing group performance level specified in the § 172.101 Table. These materials must be packaged as follows:

(a) In wooden boxes (4C1, 4C2, 4D, or 4F) with inner metal receptacles which have a positive (not friction) means of closure and contain not more than 15 kilograms (33.1 pounds) each.

(b) In steel drums (1A1 or 1A2) with a gross mass not exceeding 150 kg (330.7 pounds) per drum.

(c) In fiberboard boxes (4G) with inner metal receptacles which have a positive (not friction) means of closure

and contain not more than 7.5 kilograms (16.53 pounds) each.

(d) In fiber drums (1G) with inner metal receptacles which have a positive (not friction) means of closure and contain not more than 15 kilograms (33.1 pounds) each.

(e) In plywood drums (1D) with inner metal receptacles which have a positive (not friction) means of closure and contain not more than 15 kilograms (33.1 pounds) each.

§ 173.188 White or yellow phosphorus.

Phosphorus, white or yellow, when offered for transportation by rail, highway, or water, must be packaged in water or dry in packagings conforming to the requirements of Part 178 of this subchapter at the Packing Group I performance level, as follows:

(a) When placed in water, it must be packaged in specification packagings as follows:

(1) Wooden boxes (4C1, 4C2, 4D, or 4F) with:

(i) Inner hermetically sealed (soldered) metal cans, enclosed in other hermetically sealed (soldered) metal cans, or

(ii) Inner water-tight metal cans containing not over 0.5 kg (1.0 pounds) of phosphorus with screw-top closures.

(2) Metal drums (1A1 or 1A2), not over 115 liters (30.4 gallons) capacity each.

(b) When dry, it must be cast solid and shipped in packagings as follows:

(1) Metal drums (1A2) not over 115 liters (30.4 gallons) capacity each.

(2) In projectiles or bombs when shipped by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government, without bursting elements.

§ 173.192 Packaging for certain Packing Group I poisonous materials.

When § 172.101 of this subchapter specifies that a poisonous material be packaged under this section, only specification cylinders are authorized, as follows:

(a) Specification 3A1800, 3AA1800, 3AL1800, 3D, 3E1800, or 33 cylinders, under the following conditions:

(1) Specification 3A, 3AA and 3AL cylinders may not exceed 125 pounds (56.7 kg) water capacity (nominal).

(2) Specification 3D and 33 cylinders may not exceed 280 pounds (127 kg) water capacity (nominal).

(3) Specification 3AL cylinders containing arsine or phosphine may only be transported by highway and rail.

(b) Packagings must conform to the requirements of § 173.40 of this part.

(c) For cylinders used for phosgene, the filling density may not exceed 125

percent and a cylinder may not contain more than 150 pounds (68.0 kg) of phosgene.

§ 173.193 Bromoacetone, methyl bromide, chloropicrin and methyl bromide or methyl chloride mixtures, etc.

(a) Bromoacetone must be packaged as follows in wooden boxes (4C1, 4C2, 4D or 4F) with inner glass receptacles or tubes in hermetically sealed metal receptacles in corrugated fiberboard cartons. Bottles must not contain over 500 grams (1.1 pounds) of liquid each and be cushioned in cans with at least 1/2 inch (12.7 mm) of absorbent material. Total amount of liquid in outer box must not exceed 11 kg (24.3 pounds). Packagings must conform to the requirements of Part 178 of this subchapter at the Packing Group I performance level.

(b) Bromoacetone, methyl bromide, chloropicrin and methyl bromide mixtures, chloropicrin and methyl chloride mixtures, and chloropicrin mixtures charged with non-flammable, non-liquefied compressed gas must be packed in Specification 3A, 3AA, 3B, 3C, 3E, 4A, 4B, 4BA, 4BW, or 4C cylinders having not over 250 pounds (113.4 kg) water capacity (nominal).

(c) Cylinders must conform to § 173.40.

§ 173.194 Gas identification sets.

Gas identification sets containing poisonous material must be packaged in packagings conforming to the requirements of Part 178 of this subchapter at the Packing Group I performance level, as follows:

(a) In glass inner receptacles, hermetically sealed, of not over 40 milliliters (1.35 fluid ounces) each. Each glass inner receptacle must in turn be placed in a sealed fiberboard receptacle, cushioned with absorbent material. Not more than 12 fiberboard receptacles must in turn be placed in a fiberboard box (4G). No more than four boxes, well-cushioned, must in turn be placed in a steel cylinder. The cylinder must have a wall thickness of at least 3.7 mm (0.146 inch) and must have a hermetically sealed steel closure.

(b) When the poisonous material is adsorbed in a medium such as activated charcoal or silical gel, gas identification sets may be shipped as follows:

(1) If the poisonous material does not exceed 5 milliliters (0.17 fluid ounce) if a liquid or 5 grams (0.18 ounce) if a solid, it may be packed in glass inner receptacles of not over 120 milliliters (4.1 fluid ounce) each. Each glass receptacle, cushioned with absorbent material must be packed in a hermetically sealed metal can of not less

than 0.30 mm (0.0120 inch) wall thickness. Metal cans, surrounded on all sides by at least 25 mm (1 inch) of dry sawdust, must be packed in 4C1, 4C2, 4D or 4F wooden boxes. Not more than 100 milliliters (3.38 fluid ounces) or 100 grams (3.53 ounces) of poisonous materials may be packed in one outer wooden box.

(2) If the poisonous material does not exceed 5 milliliters (0.17 fluid ounce) if a liquid or 20 grams (0.7 ounce) if a solid, it may be packed in glass inner receptacles with screw-top closures of not less than 60 milliliters (2.02 fluid ounces), hermetically sealed. Twelve bottles containing poisonous material, not to exceed 100 milliliters, or grams, or both, may be placed in a plastic carrying case, each glass receptacle surrounded by absorbent cushioning and each separated from the other by sponge rubber partitions. The plastic carrying case must be placed in a tightly fitting fiberboard box which in turn must be placed in a tightly fitting 4C1, 4C2, 4D or 4F wooden box.

§ 173.195 Hydrocyanic acid, liquid (prussic acid) and hydrocyanic acid liquefied.

(a) Hydrocyanic acid, liquid (prussic acid) and hydrocyanic acid liquefied, must be packed in specification cylinders as follows:

(1) As prescribed in § 173.192, or

(2) Specification 3A480, 3A480X, 3AA480, or 3AL1800 metal cylinders of not over 126.08 kg (278 pounds) water capacity (nominal). Shipments in 3AL cylinders are authorized only when transported by highway and rail.

(b) Cylinders may not be charged with more than 0.27 kg (0.6 pound) of liquid per 0.45 kg (1 pound) water capacity of cylinder. Each filled cylinder must be tested for leakage before shipment and must show absolutely no leakage; this test must consist in passing a piece of Guignard's sodium picrate paper over the closure of the cylinder, without the protection cap attached, to detect any escape of hydrocyanic acid from the cylinder. Other equally efficient test methods may be used in place of sodium picrate paper.

(c) Packagings for hydrocyanic acid must conform to § 173.40.

§ 173.196 Infectious substances (etiologic agents).

(a) Authorized packagings and components are as follows:

(1) Inner packagings comprising:

(i) A watertight primary receptacle; (ii) A watertight secondary packaging; and

(iii) An absorbent material must be placed between the primary receptacle and the secondary packaging. If

multiple-primary receptacles are placed in a single secondary packaging they must be wrapped individually to ensure that contact between them is prevented. The absorbent material, such as cotton wool, must be sufficient to absorb the entire contents of all primary receptacles.

(2) An outer packaging which is capable of withstanding the specification performance tests found in § 173.465 or § 173.466. Packages consigned as freight must be at least 100 mm (3.94 inches) in the smallest over all external dimension.

(b) For all packages containing infectious substances, an itemized list of contents must be enclosed between the secondary packaging and the outer packaging.

(c) Although exceptional cases, such as whole organs, may require special packaging, the great majority of infectious substances can and must be packaged according to the following guidelines.

(1) *Lyophilized substances.* Primary receptacles include flame-sealed glass ampoules or rubber-stopped glass vials fitted with metal seals.

(2) *Liquid or solid substances.* (i) *Substances shipped at ambient temperatures or higher.* Primary receptacles include those of glass, metal or plastic. Positive means of ensuring a leakproof seal, such as heat seal, skirted stopper or metal crimp seal must be provided. If screw caps are used, they must be reinforced with adhesive tape.

(ii) *Substances shipped refrigerated or frozen (ice, pre-frozen packs, dry ice).* Primary receptacles closed by screw caps must not be used. Ice or dry ice must be placed outside the secondary packagings. Interior supports must be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the packaging must be leakproof. If dry ice is used, the outer packaging must permit the release of carbon dioxide gas.

(iii) *Substances shipped in liquid nitrogen.* Primary receptacles must be heat-sealed. Plastic capable of withstanding very low temperatures must be used instead of glass receptacles. Secondary packaging must also withstand very low temperatures and in most cases will need to be fitted over individual primary receptacles. Requirements for shipment of liquid nitrogen must also be observed.

(d) Whatever the intended temperature of shipment, the primary receptacle and secondary packaging used for infectious substances must be capable of withstanding, without

leakage, an internal pressure which produces a pressure differential of not less than 95 kPa (13.8 psi) and temperatures in the range of -40 °C to +55 °C (-40 °F to +131 °F).

(e) The requirements of this section supplement the requirements of the Department of Health and Human Services contained in 42 CFR Part 72.

(f) Exceptions. The following substances are not subject to any requirements of this subchapter if the items as packaged do not contain any material otherwise subject to the requirements of this subchapter.

(1) Diagnostic specimens.

(2) Biological products.

(3) Cultures of etiologic agents of 50 milliliters (1.67 fluid ounces) or less total quantity in one outside package.

§ 173.198 Nickel carbonyl.

(a) Nickel carbonyl must be packed in specification steel or nickel cylinders as prescribed for any compressed gas except acetylene. A cylinder used exclusively for nickel carbonyl may be given a complete external visual inspection in lieu of the interior hydrostatic pressure test required by § 173.34(e). Visual inspection must be in accordance with CGA Pamphlet C-6.

(b) Packagings for nickel carbonyl must conform to § 173.40.

§ 173.201 Non-bulk packagings for liquid hazardous materials in Packing Group I.

(a) When § 172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of Subpart B of Part 173, to the requirements of Part 178 at the Packing Group I or II performance level (unless otherwise excepted), and to the particular requirements of the special provisions of Column 7 of the § 172.101 Table.

(b) The following combination packagings are authorized:

Outer Packagings

Steel drum: 1A2
Aluminum drum: 1B2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H2
Steel jerrican: 3A2
Plastic jerrican: 3H2
Steel box: 4A1 or 4A2
Aluminum box: 4B1 or 4B2
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2

Inner Packagings

Glass or earthenware receptacles

Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum:
1N1 or 1N2
Plastic drum: 1H1 or 1H2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Plastic receptacle in steel, aluminum, fiber or
plastic drum: 6HA1, 6HB1, 6HC1, 6HH
Plastic receptacle in steel, aluminum,
wooden, plywood or fiberboard box: 6HA2,
6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel,
aluminum or fiber drum: 6PA1, 6PB1 or
6PG1
Glass, porcelain or stoneware in steel,
aluminum, wooden or fiberboard box:
6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or
expanded plastic packaging: 6PH1 or 6PH2
Cylinders, specification, as prescribed for any
compressed gas, except for Specifications 8
and 3HT

§ 173.202 Non-bulk packagings for liquid hazardous materials in Packing Group II.

(a) When § 172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of Subpart B of Part 173, to the requirements of Part 178 at the Packing Group I or II performance level (unless otherwise excepted), and to the particular requirements of the special provisions of Column 7 of the § 172.101 Table.

(b) The following combination packagings are authorized:

Outer Packagings

Steel drum: 1A2
Aluminum drum: 1B2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H2
Wooden barrel: 2C2
Steel jerrican: 3A2
Plastic jerrican: 3H2
Steel box: 4A1 or 4A2
Aluminum box: 4B1 or 4B2
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2

Inner Packagings

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum:
1N1 or 1N2
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C1
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Plastic receptacle in steel, aluminum, fiber or
plastic drum: 6HA1, 6HB1, 6HC1 or 6HH
Plastic receptacle in steel, aluminum,
wooden, plywood or fiberboard box: 6HA2,
6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel,
aluminum or fiber drum: 6PA1, 6PB1 or
6PG1
Glass, porcelain or stoneware in steel,
aluminum, wooden or fiberboard box:
6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or
expanded plastic packaging: 6PH1 or 6PH2
Plastic receptacle in plywood drum: 6HD1
Glass, porcelain or stoneware in plywood
drum or wickerwork hamper: 6PD1 or 6PD2
Cylinders, specification, as prescribed for any
compressed gas, except for Specifications 8
and 3HT

§ 173.203 Non-bulk packagings for liquid hazardous materials in Packing Group III.

(a) When § 172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each packaging must conform to the general packaging requirements of Subpart B of Part 173, to the requirements of Part 178 at the Packing Group I, II or III performance level, and to the requirements of the special provisions of Column 7 of the § 172.101 Table.

(b) The following combination packagings are authorized:

Outer Packagings

Steel drum: 1A2
Aluminum drum: 1B2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H2
Wooden barrel: 2C2
Steel jerrican: 3A2
Plastic jerrican: 3H2
Steel box: 4A1 or 4A2
Aluminum box: 4B1 or 4B2
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2

Inner Packagings

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) The following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum:
 1N1
Plastic drum: 1H1 or 1H2
Wooden barrel: 2C3
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Plastic receptacle in steel, aluminum, fiber or plastic drum: 6HA1, 6HB1, 6HC1 or 6IH
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA2, 6HB2, 6HC2, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum or fiber drum: 6PA1, 6PB1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in solid or expanded plastic packaging: 6PH1 or 6PF1
Plastic receptacle in plywood drum: 6ID1
Glass, porcelain or stoneware in plywood drum or wickerwork hamper: 6PD1 or 6PD2
Cylinders, as prescribed for any compressed gas, except for Specifications 8 and 31 IT

§ 173.204 Non-bulk non-specification packagings for certain hazardous materials.

When § 172.101 of this subchapter specifies that a liquid or solid hazardous material be packaged under this section, any appropriate non-bulk packaging which conforms to the general packaging requirements of Subpart B of Part 173 may be used for its transportation. Packagings need not conform to the requirements of Part 178 of this subchapter.

§ 173.205 Specification cylinders for liquid hazardous materials.

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, any specification cylinder, except those specified for acetylene, is authorized. Cylinders used for poisonous materials (Division 6.1 or 2.3) must conform to the requirements of § 173.40.

§ 173.211 Non-bulk packagings for solid hazardous materials in Packing Group I.

(a) When § 172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of Subpart B of Part 173, to the requirements of Part 178 at the Packing Group I performance level, and to the requirements of the special provisions of Column 7 of the § 172.101 Table.

(b) The following combination packagings are authorized:

Outer Packagings

Steel drum: 1A2
Aluminum drum: 1B2
Plywood drum: 1D
Fiber drum: 1G
Plastic drum: 1H2
Wooden barrel: 2C2
Steel jerrican: 3A2
Plastic jerrican: 3H2
Steel box: 4A1 or 4A2
Aluminum box: 4B1 or 4B2
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Solid plastic box: 4H2

Inner Packagings

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Metal drum other than steel or aluminum:
 1N1 or 1N2
Plastic drum: 1H1 or 1H2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Steel box with liner: 4A2
Aluminum box with liner: 4B2
Natural wood box, sift proof: 4C2
Plastic receptacle in steel, aluminum, plywood, fiber or plastic drum: 6HA2, 6HB1, 6HD1, 6HG1 or 6IH
Plastic receptacle in steel, aluminum, wooden, plywood or fiberboard box: 6HA1, 6HB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum, plywood or fiber drum: 6PA1, 6PB1, 6PD1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden or fiberboard box: 6PA2, 6PB2, 6PC, or 6PG2
Glass, porcelain or stoneware in expanded or solid plastic packaging: 6PH1 or 6PF1

§ 173.212 Non-bulk packagings for solid hazardous materials in Packing Group II.

(a) When § 172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of Subpart B of Part 173, to the requirements of Part 178 at the Packing Group I or II performance level, and to the requirements of the special provisions of Column 7 of the § 172.101 Table.

(b) The following combination packagings are authorized:

Outer Packagings

Steel drum: 1A2
Aluminum drum: 1B2
Plywood drum: 1D
Fiber drum: 1G

Plastic drum: 1H2
Wooden barrel: 2C2
Steel jerrican: 3A2
Plastic jerrican: 3H2
Steel box: 4A1 or 4A2
Aluminum box: 4B1 or 4B2
Natural wood box: 4C1 or 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Solid plastic box: 4H2

Inner Packagings

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) Except for transportation by passenger aircraft, the following single packagings are authorized:

Steel drum: 1A1 or 1A2
Aluminum drum: 1B1 or 1B2
Plywood drum: 1D
Plastic drum: 1H1 or 1H2
Fiber drum: 1G
Metal drum other than steel or aluminum:
 1N1 or 1N2
Wooden barrel: 2C1 or 2C2
Steel jerrican: 3A1 or 3A2
Plastic jerrican: 3H1 or 3H2
Steel box: 4A1
Steel box with liner: 4A2
Aluminum box: 4B1
Aluminum box with liner: 4B2
Natural wood box: 4C1
Natural wood box, sift proof: 4C2
Plywood box: 4D
Reconstituted wood box: 4F
Fiberboard box: 4G
Expanded plastic box: 4H1
Solid plastic box: 4H2
Bag, woven plastic: 5H1, 5H2 or 5H3
Bag, textile: 5L1, 5L2 or 5L3
Bag, paper, multiwall, water resistant: 5M12
Plastic receptacle in steel, aluminum, plywood, fiber or plastic drum: 6HA1, 6IB1, 6HD1, 6HG1 or 6IH
Plastic receptacle in steel, aluminum, wood, plywood or fiberboard box: 6HA2, 6IB2, 6HC, 6HD2 or 6HG2
Glass, porcelain or stoneware in steel, aluminum, plywood or fiber drum: 6PA1, 6PB1, 6PD1 or 6PG1
Glass, porcelain or stoneware in steel, aluminum, wooden fiberboard box: 6PA2, 6PB2, 6PC or 6PG2
Glass, porcelain or stoneware in expanded or solid plastic packaging: 6PH1 or 6PF2

§ 173.213 Non-bulk packagings for solid hazardous materials in Packing Group III.

(a) When § 172.101 of this subchapter specifies that a solid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation. Each package must conform to the general packaging requirements of Subpart B of Part 173, to the requirements of Part 178 at the Packing Group I, II or III performance level, and to the requirements of the

special provisions of Column 7 of the § 172.101 Table.

(b) The following combination packagings are authorized:

Outer Packagings

Steel drum: 1A2

Aluminum drum: 1B2

Plywood drum: 1D

Fiber drum: 1G

Plastic drum: 1H2

Wooden barrel: 2C2

Steel jerrican: 3A2

Plastic jerrican: 3H2

Steel box: 4A1 or 4A2

Aluminum box: 4B1 or 4B2

Natural wood box: 4C1 or 4C2

Plywood box: 4D

Reconstituted wood box: 4F

Fiberboard box: 4G

Solid plastic box: 4H2

Inner Packagings

Glass or earthenware receptacles

Plastic receptacles

Metal receptacles

Glass ampoules

(c) The following single packagings are authorized:

Steel drum: 1A1 or 1A2

Aluminum drum: 1B1 or 1B2

Plywood drum: 1D

Fiber drum: 1G

Plastic drum: 1H1 or 1H2

Metal drum other than steel or aluminum:

1N1 or 1N2

Wooden barrel: 2C1 or 2C2

Steel jerrican: 3A1 or 3A2

Plastic jerrican: 3H1 or 3H2

Steel box with liner: 4A2

Steel box: 4B1

Aluminum box with liner: 4B2

Natural wood box: 4C1

Natural wood box, sift proof: 4C2

Plywood box: 4D

Reconstituted wood box: 4F

Fiberboard box: 4G

Expanded plastic box: 4H2

Solid plastic box: 4H2

Bag, woven plastic: 5H1, 5H2 or 5H3

Bag, textile: 5L1, 5L2 or 5L3

Bag, paper, multiwall, water resistant: 5M2

Plastic receptacle in steel, aluminum,

plywood, fiber or plastic drum: 6HA1,

6HB1, 6HD1, 6HG1 or 6HH1

Plastic receptacle in steel, aluminum, wood,

plywood or fiberboard box: 6HA2, 6HB2,

6HC, 6HD2 or 6HG2

Glass, porcelain or stoneware in steel,

aluminum, plywood or fiber drum: 6PA1,

6PB1, 6PD1 or 6PC1

Glass, porcelain or stoneware in steel,

aluminum, wood or fiberboard box: 6PA2,

6PB2, 6PC or 6PG2

Glass, porcelain or stoneware in expanded or

solid plastic packaging: 6PH1 or 6PH2

§ 173.214 Packagings which require approval by the Director, OHMT.

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, packagings and method of shipment must be approved by the Director, OHMT, prior to the first shipment.

§ 173.216 Asbestos, blue or white.

(a) Asbestos, blue or white, includes each of the following hydrated mineral silicates: Chrysotile, crocidolite, amosite, anthophyllite asbestos, tremolite asbestos, actinolite asbestos, and every product containing any of these materials.

(b) Commercial asbestos is any material or product containing asbestos that has commercial value because of its asbestos content.

(c) Asbestos which is immersed or fixed in a natural or artificial binder material (such as cement, plastic, asphalt, resins or mineral ore), waste asbestos, and manufactured products containing asbestos or any materials or products whose commercial value is not dependent on their asbestos content, are not subject to the requirements of this subchapter.

(d) Packagings for commercial asbestos must conform to the general packaging requirements of Subpart B of this part but need not conform to the requirements of Part 178 of this subchapter. Commercial asbestos must be offered for transportation and transported in—

(1) Rigid, leaktight packagings, such as metal or fiber drums, portable tanks, hopper-type rail cars, or hopper-type motor vehicles;

(2) Bags or other non-rigid packagings in closed freight containers, motor vehicles, or rail cars that are loaded by and for the exclusive use of the consignor and unloaded by the consignee;

(3) Bags or other non-rigid packagings which are dust-and sift-proof. When transported by other than private carrier by highway, such packagings containing asbestos must be palletized and unitized by methods such as shrink-wrapping in plastic film or wrapping in fiberboard secured by strapping. Pallets need not be used during transportation by vessel for loads with slings that are unitized by methods such as shrink-wrapping, if the slings adequately and evenly support the loads and the unitizing method prevents shifting of the bags or other non-rigid packagings during conditions normally incident to transportation; or

(4) Bags or other non-rigid packagings which are dust-and sift-proof in strong outside fiberboard or wooden boxes.

§ 173.217 Carbon dioxide, solid (dry ice).

(a) Carbon dioxide, solid (dry ice), when offered for transportation by aircraft or water, must be packed in packagings designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings. Packagings must conform to the general

packaging requirements of Subpart B of this part but need not conform to the requirements of Part 178 of this subchapter. For each shipment by air exceeding five pounds per package, advance arrangements between the shipper and each carrier must be made.

(b) Railroad cars and motor vehicles containing solid carbon dioxide, when accepted for transportation on board ocean vessels, must be conspicuously marked on two sides "WARNING CO₂ SOLID (DRY ICE)."

(c) Other packagings, when accepted for transportation on board ocean vessels, must be marked "CARBON DIOXIDE, SOLID—DO NOT STOW BELOW DECKS."

(d) Not more than 200 kg (440.9 lbs) of solid carbon dioxide may be transported in any one cargo compartment or bin on any aircraft except by specific and special arrangement between the shipper and the aircraft operator.

(e) Carbon dioxide, solid (dry ice) is excepted from the shipping paper and certification requirements of this subchapter if the requirements of paragraphs (a) and (d) of this section are complied with and the package is marked "Carbon dioxide, solid" or "Dry ice" and marked with an indication that the material being refrigerated is used for diagnostic or treatment purposes (e.g., frozen medical specimens).

§ 173.218 Fish meal or fish scrap.

(a) Except as provided in paragraph (b) of this section, fish meal or fish scrap, containing at least 6 percent but not more than 12 percent water, is authorized for transportation by water only when packaged as follows:

(1) Burlap (jute) bag;

(2) Multi-wall paper bag;

(3) Polyethylene-lined burlap or paper bag;

(4) Cargo tank;

(5) Portable tank;

(6) Rail car; or

(7) Freight container.

(b) Fish meal or fish scrap may not be offered for transportation if the temperature of the material exceeds 49 °C (120.2 °F).

(c) When fish scrap or fish meal is offered for transportation by vessel in bulk in freight containers, the fish meal must contain at least 100 PPM of antioxidant (ethoxyquin) at the time of shipment.

§ 173.219 Life rafts, aircraft survival kits, etc.

(a) A life raft or aircraft survival kit or aircraft evacuation slide containing small quantities of hazardous materials which are required as part of the life-

saving appliance must conform to the requirements of this section. Packagings are excepted from the specification packaging requirements of this subchapter.

(b) Hazardous materials must be packaged as follows:

(1) Non-flammable compressed gases must be packaged in cylinders in accordance with the requirements of this subchapter;

(2) Smoke and illumination signal flares must be in plastic or fiberboard receptacles;

(3) Strike-anywhere matches must be cushioned to prevent movement or friction in a cylindrical metal or composition receptacle with a screw-type closure;

(4) Flammable liquids must be in strong inner packagings in a repair kit; and

(5) Limited quantities of other hazardous materials are permitted if packaged in accordance with the requirements of this subchapter.

(c) Materials not subject to the requirements of this subchapter which are an integral part of the life-saving appliance must be packaged in a strong fiberglass kit case which is overpacked in a waterproof fiberboard packaging, or be packaged in other strong outer packagings.

§ 173.220 Internal combustion engines, self-propelled vehicles, and mechanical equipment containing internal combustion engines or wet batteries.

(a) *Applicability.* An internal combustion engine, self-propelled vehicle, or mechanized equipment is subject to the requirements of this subchapter when transported as cargo on a transport vehicle if—

(1) The engine or fuel tank contains a flammable liquid or gaseous fuel;

(2) It is equipped with a wet electric storage battery other than a non-spillable battery; or

(3) It contains other hazardous materials subject to the requirements of this subchapter.

(b) *Flammable liquid fuel.* Except as provided in this paragraph, flammable liquid fuel tanks must be completely drained and securely closed. Up to 500 milliliters (16.9 ounces) of fuel may be left in engine components and fuel lines provided the lines are securely closed to prevent leakage of fuel. Fuel may remain in engines and tanks installed in self-propelled vehicles and mechanical equipment under the following conditions:

(1) For transportation by motor vehicle or rail car, the fuel tanks must be securely closed.

(2) For transportation by vessel, the shipment must conform to § 176.905 of this subchapter; and

(3) For transportation by aircraft, the shipment must conform to § 175.305 of this subchapter

(c) *Wet batteries.* Wet batteries must either be installed, securely fastened in an upright position, and protected against short circuits and leakage or be removed and packaged separately under § 173.159. In addition—

(1) For transportation by vessel, the shipment must conform to § 176.905 of this subchapter; and

(2) For transportation by passenger-carrying aircraft, a wheelchair equipped with a wet battery must conform to § 173.222.

(d) *Truck bodies or trailers on flat cars.* Truck bodies or trailers with automatic heating or refrigerating equipment of the flammable liquid type may be shipped with fuel tanks filled and equipment operating or inoperative, when used for the transportation of other freight and loaded on flat cars as part of a joint rail and highway movement, provided the equipment and fuel supply conform to the requirements of § 177.834(1) and are of a type examined by the Bureau of Explosives and approved by the Director, OHMT.

(e) *Gases.* Compressed gas tanks and cylinders, containing gases, which are component parts of vehicles or mechanical equipment must conform to § 173.306.

(f) *Other hazardous materials.* Other hazardous materials must be packaged and transported in accordance with the requirements of this subchapter.

(g) *Exceptions.* Except as provided in paragraph (f) of this section, shipments made under the provisions of this section—

(1) Are not subject to any other requirements of this subchapter, for transportation by motor vehicle or rail car; and

(2) Are not subject to the requirements of Subparts D, E, and F (marking, labeling, and placarding, respectively) of Part 172 of this subchapter, for transportation by vessel or aircraft.

§ 173.221 Polystyrene beads, expandable.

Polystyrene beads or granules, expandable, impregnated with flammable gas or liquid as a blowing agent and plastic moulding materials in dough, sheet or extruded rope form must be packed in wooden (4C1 or 4C2), plywood (4D), fiberboard (4G) or reconstituted wood (4F) boxes with sealed inner plastic liners, plywood drums (1D), fiber drums (1G) with sealed inner plastic liner or in metal (1A1, 1A2, 1B1 or 1B2) packagings.

§ 173.222 Wheelchairs equipped with wet electric storage batteries.

(a) For transportation by highway, rail, water, or cargo aircraft only, wheelchairs equipped with wet electric storage batteries must conform to the provisions in § 173.220(c) of this part.

(b) For transportation by passenger-carrying aircraft, wheelchairs equipped with wet electric storage batteries are not subject to requirements of this subchapter other than the following:

(1) Wheelchairs equipped with non-spillable batteries as defined in § 173.159(d) of this subchapter may be shipped as checked luggage provided the battery is disconnected, the battery terminals are insulated to prevent accidental short circuits, and the battery is securely attached to the wheelchair.

(2) Wheelchairs equipped with spillable batteries may be shipped as checked baggage, provided that the wheelchair can be loaded, stowed, secured, and unloaded while always in an upright position. The battery must be disconnected, the terminals insulated to prevent accidental short circuits, and the battery securely attached to the wheelchair. The pilot-in-command must be advised, either orally or in writing, prior to departure, of the location of the wheelchair aboard the aircraft. If the wheelchair cannot be loaded, stowed, secured and unloaded always in an upright position, the battery must be removed and the wheelchair may then be carried without restriction. The removed battery must be carried in strong, rigid, outside packagings as follows:

(i) Outside packagings must be leaktight, impervious to battery fluid, loaded aboard the aircraft in accordance with the required orientation markings and be protected against upset by being secured to pallets or by being secured in cargo compartments using appropriate means (other than by bracing with freight or baggage) such as by use of restraining straps, brackets or holders;

(ii) Batteries must be protected against short circuits, secured upright in their outside packagings, and surrounded by compatible absorbent material sufficient to absorb their total liquid contents; and

(iii) Outside packagings must be marked to indicate proper orientation, and with the words "Battery, wet, with wheelchair", and be labeled with a CORROSIVE label.

§ 173.225 Packagings for organic peroxides.

(a) When the § 172.101 Table specifies that an organic peroxide be packaged

under this section, only non-bulk packagings which conform to the provisions of this section may be used for its transportation. Organic peroxides which require temperature control for stabilization are subject to the provisions of § 173.21(f) of this part.

(b) Organic peroxides table. (1) The first column of the table gives the identification numbers for organic

peroxides as specified in Column 4 of the § 172.101 Table.

(2) The second column gives the packing group as specified in Column 5 of the § 172.101 Table. Each packaging used for an organic peroxide must be capable of meeting the test requirements of Subpart M of Part 178 at the specified level of performance.

(3) The third column specifies the packaging method or methods which

must be used to pack an organic peroxide. The table of packaging methods in paragraph (c) of this section defines the packaging methods.

(4) The fourth column indicates, by the letters "TC", that an organic peroxide may require temperature control for stabilization. See § 173.21(f) of this part for provisions applicable to such materials.

ORGANIC PEROXIDES TABLE

Identification number (UN or NA) (1)	Packing group (2)	Packaging methods (3)	Temperature control (4)
2080.....	I	P1a, P8.....	
2081.....	I	P1a, P8.....	
2082.....	I	P1f, P13b.....	
2083.....	I	P1b, P2d, P8.....	
2084.....	I	P1b, P8.....	
2085.....	I	P1g, P1h, P13a, P14.....	
2087.....	II	P1a, P2c, P3b, P6a, P16, P20a, P20b, P30.....	
2088.....	I	P1d, P13b.....	
2089.....	II	P1a, P3b, P6a, P20b, P20d.....	
2090.....	I	P1b, P2f, P6b.....	
2091.....	I	P1a, P2c, P8, P10, P22a, P25b.....	
2092.....	I	P1a, P8, P10, P22a, P24.....	
2093.....	I	P1a, P8, P10, P22a, P24.....	
2094.....	I	P1a, P8, P10, P22a.....	
2095.....	I	P1c, P8.....	
2096.....	I	P1a, P2d, P8.....	
2097.....	I	P1e, P8, P13b, P18.....	
2098.....	I	P1a, P2c, P8, P10, P22a, P25b.....	
2099.....	I	P15.....	
2100.....	I	P1a, P8.....	
2101.....	I	P1a, P2a, P3b, P6a, P8, P16, P20c, P20d, P22a, P25b, P30.....	
2102.....	I	P1a, P2c, P8, P22b, P25b.....	
2103.....	I	P1e, P13b.....	
2104.....	I	P1a, P2d, P8.....	
2105.....	I	P1f, P3b, P6a, P20c, P20d, P21.....	
2106.....	I	P1a, P8.....	
2107.....	I	P1a, P2c, P8, P22a, P25b.....	
2108.....	I	P1a, P2c, P3b, P6a, P16, P20c, P20d, P22a, P25b.....	
2110.....	I	P1b, P8TC 2111 II P1a, P2d, P8.....	
2112.....	I	P1a, P3b, P6a, P20c, P20d, P24.....	
2113.....	I	P1b, P2f, P6b.....	
2114.....	I	P1a, P2c, P3b, P6a, P16, P20c, P20d.....	
2115.....	I	P1b, P2d, P8.....	
2116.....	I	P1a, P2c, P8, P22b, P25b.....	
2117.....	I	P1c, P12, P13b.....	
2118.....	I	P1a, P2c, P3b, P6a, P8, P16, P20b, P20d, P22a, P25b.....	
2119.....	I	P1b, P2d, P8.....	
2120.....	I	P1a, P2c, P3b, P6a, P17, P20b, P24, P25a.....	
2121.....	I	P1a, P2a, P24.....	
2122.....	I	P1b, P2d, P8.....	
2123.....	I	P1a, P3b, P6a, P13a, P14, P20b.....	
2124.....	I	P1a, P2c, P8, P22b, P25c.....	
2125.....	I	P1a, P2d, P8.....	
2126.....	I	P1a, P8.....	
2127.....	I	P1b, P2d, P8, P18, P24, P25a.....	
2128.....	I	P1a, P2c, P3b, P6a, P24, P25a.....	
2129.....	I	P1a, P2c, P3b, P6a.....	
2130.....	I	P1c, P3a.....	
2131.....	I	P1b, P2d, P8, P24, P25a.....	
2132.....	I	P1h, P7, P9, P13b.....	
2133.....	I	P1b, P2d, P8.....	
2134.....	I	P1d, P13b, P14, P15.....	
2135.....	I	P1a, P2c, P22a, P25b.....	
2136.....	I		

ORGANIC PEROXIDES TABLE—Continued

Identification number (UN or NA) (1)	Packing group (2)	Packaging methods (3)	Temperature control (4)
2137.....	II	P1b, P6b.....	
2138.....	II	P1a, P2c, P3b, P6a, P16, P20b, P20d, P30.....	
2139.....	II	P1b, P2d, P8.....	
2140.....	II	P1e, P8, P18.....	
2141.....	II	P16.....	
2142.....	II	P1a, P18.....	
2143.....	II	P1b, P6, P18.....	
2144.....	H	P1e.....	
2145.....	H	P1e, P18.....	
2146.....	H	P1a, P6.....	
2147.....	H	P1a.....	
2148.....	H	P1a, P3b, P6a, P14, P20c, P20d.....	
2149.....	I	P1f, P14, P20d.....	
2150.....	II	P1d.....	
2151.....	II	P1b.....	
2152.....	II	P1d, P14, P20d.....	
2153.....	I	P1b.....	
2154.....	II	P1a, P3b, P6a, P20c, P20d.....	
2155.....	II	P1a, P8, P18.....	
2156.....	II	P1a.....	
2157.....	II	P1b, P18.....	
2158.....	II	P1a, P18.....	
2159.....	II	P1a.....	
2160.....	II	P16.....	
2161.....	I	P1e, P18.....	
2162.....	I	P1a, P2c, P8, P22b, P24, P25c.....	
2163.....	I	P1b.....	
2164.....	II	P1a, P2c.....	
2165.....	II	P1d.....	
2166.....	II	P1d.....	
2167.....	II	P1a, P8	
2168.....	I	P1a.....	
2169.....	II	P1b.....	
2170.....	II	P1b, P8, P24, P25a.....	
2171.....	I	P1a, P2c, P8, P22b, P25c.....	
2172.....	II	P1d, P3b, P6a, P20c, P20d, P21.....	
2173.....	II	P1d, P3b, P6a, P20c, P20d, P21.....	
2174.....	I	P1d, P12.....	
2175.....	II	P1b.....	
2176.....	I	P1d.....	
2177.....	II	P1e.....	
2178.....	II	P1e.....	
2179.....	II	P1e.....	
2180.....	II	P1f.....	
2182.....	II	P2d, P8, P9	
2183.....	II	P1e, P8	
2184.....	II	P1e, P8	
2185.....	II	P1a.....	
2255.....	I	P1i.....	
2550.....	I	P1a, P8	
2551.....	II	P1b, P2d, P8	
2562.....	II	P1e, P18	
2592.....	II	P1a	
2593.....	I	P1b	
2594.....	II	P1e	
2595.....	II	P1a	
2596.....	II	P1a	
2597.....	II	P1e	
2598.....	II	P1a	
2755.....	I	P28	
2756.....	I	P1a, P30	
2883.....	II	P1a	
2884.....	II	P1a	
2885.....	II	P1a	
2886.....	II	P1a	
2887.....	II	P1a	
2888.....	II	P1a	TC

ORGANIC PEROXIDES TABLE—Continued

Identification number (UN or NA) (1)	Packing group (2)	Packaging methods (3)	Temperature control (4)
2889	II	P1e.....	
2890	II	P1b, P2f, P6b.....	
2891	II	P1e.....	TC
2892	II	P1a, P20a, P24.....	TC
2893	II	P1a, P20a, P24.....	TC
2894	II	P1a, P20a, P24.....	TC
2895	II	P1a, P20a, P24.....	TC
2896	II	P1a, P2c, P3b, P6a, P16, P22a, P25b, P30.....	
2897	II	P1a.....	
2898	II	P1e.....	TC
2899	I	P1a, P30.....	
2957	II	P1e.....	TC
2958	II	P1a.....	
2959	II	P1e.....	
2960	II	P1a.....	TC
2961	II	P1a.....	TC
2962	I	P1a, P13b, P14, P15.....	TC
2963	II	P1b, P3b.....	TC
2964	II	P1e.....	TC
3044	II	P1a.....	
3045	II	P1a, P2a, P24.....	
3046	I	P1a.....	
3047	II	P1b, P2d, P8.....	TC
3058	II	P1h, P13a.....	
3059	II	P14.....	
3060	II	P1e, P20d.....	
3061	II	P1a.....	
3062	II	P1a.....	
3063	II	P1a.....	TC
3067	I	P1a, P24.....	
3068	I	P1a, P24.....	
3069	II	P1a, P24.....	
3074	II	P1b, P1e.....	
3075	I	P1a, P8.....	
3081	I	P1a, P8.....	

(c) Table of packaging methods. (1) The first column lists in alphanumeric sequence, the packaging methods for organic peroxides.

(2) The second column specifies the maximum net contents permitted in each inner packaging or receptacle. If no combination packagings are authorized, this column is blank.

(3) The third column specifies the maximum net contents permitted in an

outer packaging, including a single, combination or composite packaging.

(4) The fourth column specifies inner packagings which are permitted for use, when applicable. If no combination packagings are authorized, this column is blank.

(5) The fifth column specifies outer packagings which are permitted for use. If inner packagings are specified in the fourth column, then the packaging

specified in the fifth column must be used as the outer packaging of a combination packaging; otherwise, it may be used as a single packaging.

(6) The sixth column specifies composite packagings which are permitted for use, when applicable. If no composite packagings are authorized, this column is blank.

(7) The *Table of Packaging Methods* is as follows:

Packaging method (1)	Maximum net contents of each inner packaging or receptacle (2)	Maximum net contents of outer packaging (3)	Description of packagings		
			Inner packagings (4)	Outer packagings (5)	Composite packagings (6)
P1a.....	50 kg.....	50 kg.....			
P1b.....	25 kg.....	50 kg.....			
P1c.....	10 kg.....	50 kg.....			
P1d.....	5 kg.....	50 kg.....	Plastic bottles, jars, bags or boxes....	4G or 1G or 1D or 4C1.....	6HC or 6HD1 or 6HG1 or 6GH2
P1e.....	25 kg.....	25 kg.....			
P1f.....	6 kg.....	25 kg.....			
P1g.....	5 kg.....	5 kg.....			

Packaging method (1)	Maximum net contents of each inner packaging or receptacle (2)	Maximum net contents of outer packaging (3)	Description of packagings		
			Inner packagings (4)	Outer packagings (5)	Composite packagings (6)
P1h.....	1 kg.....	10 kg.....			
P1i.....	500 g.....	1 kg.....			
P2a.....	100 kg.....	100 kg.....			
P2c	50 kg.....	50 kg.....	Plastic bottles, jars, bags or boxes.....	1A2 or 1B2 or 4A1 or 4B1.....	6HA1 or 6HA2 (steel box only) or 6HB1 or 6HB2 (aluminum box only)
P2d.....	25 kg.....	50 kg.....			
P2f.....	10 kg.....	50 kg.....			
P3a.....		60 kg.....			
P3b.....		30 kg.....			6HA2, (steel crate only) or 6HB2 (aluminum crate only) or 6HD1 or 6HG1
P6a.....	10 kg.....	90 kg.....	Metal cans, or glass bottles in metal cans, or plastic bags in metal cans, or plastic bottles in metal cans.	4G or 1G or 1D or 4C1.....	
P6b.....	10 kg.....	50 kg.....			
P7.....	3 kg.....	12 kg.....	Aluminum bottles or jars with plastic closures.	4G or 1G or 1D or 4C1.....	
P8.....	2 L.....	50 L.....	Glass bottles.....	1G or 4G or 1G or 1D or 4C1	
P9.....	7.5 L.....	7.5 L.....	Glass or earthenware bottles; or metal cans.	4G or 1G or 1D or 4C1.....	6PC or 6PD1 or 6PG1 or 6PG2
P10.....	0.5 L.....	50 L.....	Glass bottles.....	1A2 or 1B2 or 4A1 or 4B1.....	
P12.....	1 kg.....	50 kg.....	Waxed fiberboard boxes.....	4G or 1G or 1D or 4C1.....	
P13a.....	500 g.....	25 kg.....			
P13b.....	500 g.....	14 kg.....	Plastic boxes or bottles.....	4C1, compartmented	
P14.....	500 g.....	25 kg.....	Paper bags with inner ply of plastic...	4G with fire-retardant liner and partitions of fire-retardant corrugated fiberboard.	
P15.....	500 g.....	500 g.....	Paper bag with inner ply of plastic, packed singly.	4G	
P16.....	250 g.....	50 kg.....	Metal or plastic flexible tubes.....	4G or 4D.....	
P17.....	500 g.....	500 g.....	Fiber jar with sealed cap closure, packed singly.	4C1.....	
P18.....	500 ml.....	500 ml.....	Plastic bottle, packed singly	4G	
P20a.....		200 kg.....		1G with plastic liner or internal coating of polyethylene.	6HG1
P20b.....		100 kg.....			
P20c.....		50 kg.....			
P20d.....		30 kg.....			
P21.....		50 kg.....		1D with plastic liner.....	6HD1
P22a.....		50 kg.....			(1A1) or (1A2)
P22b.....		220 L.....			
P24		220 L.....		1A1 with plastic liner or 1A2 with plastic liner.	
P25a.....		200 kg.....			
P25b.....		50 kg.....		1B1 or 1B2.....	

Packaging method (1)	Maximum net contents of each inner packaging or receptacle. (2)	Maximum net contents of outer packaging (3)	Description of packagings		
			Inner packagings (4)	Outer packagings (5)	Composite packagings (6)
P25c.....	.....	220 L.....			
P28.....	500 g.....	2 kg.....	Plastic bag individually packed in round cardboard carton of 2 litres capacity. Four cartons per package.	4G or 1G.....	
P30.....	.....	25 kg.....		1H1 or 1H2	

§ 173.226 Liquids toxic by inhalation, Division 6.1, Packing Group I, Zone A.

Division 6.1, Packing Group I, materials that are toxic by inhalation and that fall within the boundaries of Zone A in the graph found in § 173.133 shall be packed in non-bulk packagings in accordance with the following paragraphs:

- (a) In specification cylinders, as authorized in § 173.40.
- (b) In 1A1, 1B1 or 1N1 drums further packed in a 1A2 or 1H2 drum. Both inner and outer drums must conform to the performance test requirements of Subpart M of Part 178 of this subchapter at the Packing Group I performance level. The outer drum must have a minimum thickness of 1.50 mm (0.059 inches) for a 1A2 outer drum or 6.30 mm (0.248 inches) for a 1H2 outer drum. Capacity of the inner drum may not exceed 220 L (58.1 gallons). In addition, the inner drum must—

(1) Be capable of satisfactorily withstanding the hydrostatic pressure test in § 178.605 of this subchapter at a test pressure of 550 kPa (79.8 psig);

(2) Satisfactorily withstand the leakproofness test in § 178.604 of this subchapter using an internal air pressure of at least twice the vapor pressure at 55 °C (131 °F) of the material to be packaged;

(3) Have screw closures that are—
(i) Closed and tightened to a torque prescribed by the closure manufacturer, using a device that is capable of measuring torque;

(ii) Physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transportation; and

(iii) Provided with a cap seal that is properly applied in accordance with the cap seal manufacturer's recommendations and is capable of withstanding an internal pressure of at least 100 kPa (14.5 psig).

(4) Have a minimum thickness as follows:

(i) If the capacity of the inner drum is less than or equal to 120 L (31.7 gallons), the minimum thickness of the inner drum is—

- (A) For a 1A1 or 1N1 drum, 1.3 mm (0.051 inches); and
- (B) For a 1B1 drum, 3.9 mm (0.154 inches).

(ii) If the capacity of the inner drum is greater than 120 L (31.7 gallons), the thickness of the inner drum is—

- (A) For a 1A1 or 1N1 drum, 1.7 mm (0.067 inches); and
- (B) For a 1B1 drum, 4.7 mm (0.185 inches); and

(5) Be isolated from the outer drum by a shock-mitigating, non-reactive material. There must be a minimum of 5.0 cm (1.97 inches) of cushioning material around the body of the inner drum, and at least 7.6 cm (2.99 inches) on the top and bottom, between the inner and outer drum.

(c) In combination packagings, consisting of an inner packaging system and an outer packaging, as follows:

(1) *Outer packagings:*

- Steel drum: 1A2
- Aluminum drum: 1B2
- Plywood drum: 1D
- Fiber drum: 1G
- Plastic drum: 1H2
- Wooden barrel: 2C2
- Steel jerrican: 3A2
- Plastic jerrican: 3H2
- Steel box: 4A1 or 4A2
- Aluminum box: 4B1 or 4B2
- Natural wood box: 4C1 or 4C2
- Plywood box: 4D
- Reconstituted wood box: 4F
- Fiberboard box: 4G
- Expanded plastic box: 4H2
- Solid plastic box: 4H2

(2) *Inner packaging system.* The inner packaging system consists of two packagings: an impact resistant receptacle of glass, earthenware, plastic or metal securely cushioned with a non-reactive, absorbent material and packed within a leak-tight packaging of metal or plastic. This combination packaging in turn is packed within the outer packaging. Capacity of each inner

receptacle may not exceed 4 L (1.06 gallons). An inner receptacle that has a closure must have a screw type closure which is physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transportation. Both the inner packaging system and the outer packaging must conform to the performance test requirements of Subpart M of Part 178 of this subchapter, at the Packing Group I performance level. The inner packaging system must meet these tests *without the benefit of the outer packaging*. The total amount of liquid contained in the outer packaging may not exceed 16 L (4.24 gallons).

§ 173.227 Liquids toxic by inhalation, Division 6.1, Packing Group I, Zone B.

Division 6.1, Packing Group I, materials that are toxic by inhalation and that fall within the boundaries of Zone B in the graph found in § 173.133 shall be packed in non-bulk packagings which conform to the performance test requirements of Subpart M of Part 178 of this subchapter, at the Packing Group I performance level. The following packagings are authorized:

(a) In packagings as authorized in § 173.226; or

(b) In 1A1, 1B1, or 1N1 drums further packed in a 1A2 or 1H2 drum. Both the inner and outer drums must conform to the performance test requirements of Subpart M of Part 178 of this subchapter at the Packing Group I performance level. The outer drum must have a minimum thickness of 1.50 mm (0.059 inches) for a 1A2 outer drum or 6.30 mm (0.248 inches) for a 1H2 outer drum. In addition, the inner drum must—

(1) Satisfactorily withstand the leakproofness test in § 178.604 of this subchapter using an internal air pressure of at least two times the vapor pressure at 55 °C (131 °F) of the material to be packaged;

(2) Have screw closures that are—

- (i) Closed and tightened to a torque prescribed by the closure manufacturer.

using a device that is capable of measuring torque;

(ii) Physically held in place by any means capable of preventing back-off or loosening of the closure by impact or vibration during transportation; and

(iii) Provided with a cap seal that is properly applied in accordance with the cap seal manufacturer's recommendations and is capable of withstanding an internal pressure of at least 100 kPa (14.5 psig).

(3) Have a minimum thickness as follows:

(i) If the capacity of the inner drum is less than or equal to 120 L (31.7 gallons), the minimum thickness of the inner drum is—

(A) For a 1A1 drum, 1.3 mm (0.051 inches); and

(B) For a 1B1 drum, 3.9 mm (0.154 inches).

(ii) If the capacity of the inner drum is greater than 120 L (31.7 gallons), the thickness of the inner drum is—

(A) For a 1A1 or 1N1 drum, 1.7 mm (0.067 inches); and

(B) For a 1B1 drum, 4.7 mm (0.185 inches); and

(4) Be isolated from the outer drum by a shock-mitigating, non-reactive material. There must be a minimum of 5.0 cm (1.97 inches) of cushioning material around the body of the inner drum, and at least 7.6 cm (2.99 inches) on the top and bottom, between the inner and outer drum; and

(5) Have a capacity not greater than 220L (58.1 gallons).

(c) 1A1, 1B1 or 1N1 drums described in paragraph (b) of this section may be used without being further packed in a 1A2 or 1H2 drum if the shipper loads the material, blocks and braces the drums within the transport vehicle and seals the transport vehicle used. Drums may not be stacked (double decked) within the transport vehicle. Shipments must be from one origin to one destination only without any intermediate pickup or delivery.

§ 173.228 Bromine pentafluoride or bromine trifluoride.

(a) When the § 172.101 Table specifies that a hazardous material be packaged under this section, only non-bulk packagings prescribed in paragraph (b) of this section are authorized for its transportation. Each packaging must conform to the general packaging requirements of Subpart B of this part, to the specification requirements of Part 178 and to the requirements of the special provisions of Column 7 of the § 172.101 Table.

(b) Specification 3A150, 3AA150, 3B240, 3BN150, 4B240, 4BA240, 4BW240 and 3E1800 cylinders are authorized.

Each valve outlet must be sealed by a threaded cap or threaded plug. Cylinder valves must be protected as specified for corrosive gases in § 173.301(g). No cylinder may be equipped with any pressure relief device. Specification 3E1800 cylinders must be packaged in accordance with the requirements of § 173.301(k).

§ 173.229 Chloric acid solution or chlorine dioxide hydrate, frozen.

(a) When the § 172.101 Table specifies that a hazardous material be packaged in accordance with this section, only 4G fiberboard boxes, with inner packagings of polyethylene or other suitable material, are authorized. Fiberboard boxes must be reinforced and insulated and sufficient dry ice must be used to maintain the hydrate or acid in a frozen state during transportation. Each packaging must conform to the general packaging requirements of Subpart B of Part 173, and to the requirements of Part 178 at the Packing Group I performance level. Shipments are authorized by private or contract carrier by motor vehicle only.

§ 173.230 Non-bulk packagings for ORM-D materials.

(a) General. Exceptions in the following paragraphs are permitted only if this section, or § 173.306 of this part, is referenced for the specific hazardous material in the § 172.101 Table of this subchapter.

(b) Small arms ammunition. (1) Small arms ammunition which has been classed as a Class C explosive may be reclassified and offered for transportation as ORM-D material when packaged in accordance with paragraph (b)(2) of this section. Shipments are excepted from the requirements of Subparts E (Labeling) and F (Placarding) of Part 172 of this subchapter. Small arms ammunition that may be shipped as ORM-D material is limited to:

(i) Ammunition for rifle, pistol or shotgun;

(ii) Ammunition with inert projectiles or blank ammunition;

(iii) Ammunition having no tear gas, incendiary, or detonating explosive projectiles; and

(iv) Ammunition not exceeding 50 caliber (½ inch) for rifle or pistol cartridges or 8 gauge for shotshells.

(2) Packaging for small arms ammunition as ORM-D material must be as follows:

(i) Ammunition must be packed in inside boxes, or in partitions which fit snugly in the outside packaging, or in metal clips;

(ii) Primers must be protected from accidental initiation;

(iii) Inside boxes, partitions or metal clips must be packed in securely closed strong outside packagings; and

(iv) Maximum gross weight is limited to 65 (29.5 kg) pounds per package.

(c) Compressed gases. A compressed gas which conforms to the provisions of paragraphs (a)(1), (a)(3) except (a)(3)(vi), or (b) except (b)(1)(iii) of § 173.306 of this subchapter and is a "Consumer commodity" as defined in § 171.8 of this subchapter may be renamed "Consumer commodity" and reclassified as ORM-D material. Each completed package must conform to the requirements of Subpart B of this part and may not exceed 65 pounds (29.5 kg) gross weight. Shipments are excepted from the requirements of Subparts E (Labeling) and F (Placarding).

(d) Other consumer commodity exceptions are provided for Class (or Division) 3, 4.1, 5.1, 5.2, 6.2, 8 or 9 materials, if the § 172.101 Table entry for the specific material refers to, and the material meets the provisions in §§ 173.150, 173.151, 173.152, 173.153, 173.154 or 173.155, as appropriate.

Subpart F—Bulk Packaging for Hazardous Materials Other Than Classes 1 and 7

§ 173.240 Bulk packaging for certain flammable solids (Division 4.1), solid oxidizers (Division 5.1), corrosive solids (Class 8) and other similar low hazard materials.

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of Subparts A and B of Part 173 of this subchapter and the special provisions specified in Column 7 of the § 172.101 Table.

(a) *Rail cars:* DOT Class 103, 104, 105, 107A, 109, 111, 112, 113, 114 and 115 tank car tanks; Class 106 and 110 multi-unit tank car tanks; AAR Class 203W, 206W and 211W tank car tanks; and metal non-DOT specification, sift proof tank car tanks and sift proof closed cars.

(b) *Motor vehicles:* Specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306, MC 307, MC 310, MC 311, MC 312, MC 330, MC 331 and MC 338 cargo tank motor vehicles; metal non-DOT specification, sift proof cargo tank motor vehicles; and sift proof closed vehicles.

(c) *Portable tanks, bins and other bulk packagings:* DOT 51, 52, 53, 56, 57 and 60 portable tanks; marine portable tanks conforming to 46 CFR 64; and sift proof non-DOT specification portable tanks, closed bins and other bulk packagings.

§ 173.241 Bulk packaging for certain combustible liquids (Class 3), flammable solids (Divisions 4.2 and 4.3), and other similar hazardous materials.

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of Subparts A and B of Part 173 of this subchapter and the special provisions specified in Column 7 of the § 172.101 Table.

(a) *Rail cars:* DOT Class 103, 104, 105, 107A, 109, 111, 112, 113, 114 and 115 tank car tanks; Class 106 and 110 multi-unit tank car tanks; AAR Class 203W, 206W and 211W tank car tanks.

(b) *Cargo tanks:* DOT specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306, MC 307, MC 310, MC 311, MC 312, MC 330, MC 331 and MC 338 cargo tank motor vehicles; and metal non-DOT specification cargo tank motor vehicles suitable for transport of liquids.

(c) *Portable tanks:* DOT 51, 52, 53, 56, 57 and 60 portable tanks; marine portable tanks conforming to 46 CFR Part 64; and non-DOT specification portable tanks suitable for transport of liquids. DOT 57 portable tanks used for the transportation by vessel of Class 3, Packing Group II, materials must conform to the following:

(1) Each tank must have a minimum design pressure of 9 psig (62.1 kPa) and be equipped in accordance with § 178.253-4 of this subchapter, except that frangible devices are not authorized; and

(2) No pressure relief device may open at less than 5 psig (34.5 kPa).

§ 173.242 Bulk packaging for certain medium hazard liquids and solids, including solids with dual-hazards.

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of Subparts A and B of Part 173 of this subchapter and the special provisions specified in Column 7 of the § 172.101 Table.

(a) *Rail cars:* DOT Class 103, 104, 105, 107A, 109, 111, 112, 113, 114 or 115 tank car tanks; Class 106 or 110 multi-unit tank car tanks; AAR Class 203W tank car tanks.

(b) *Cargo tanks:* Specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306, MC 307, MC 310, MC 311, MC 312, MC 330, MC 331 and MC 338 cargo tank motor vehicles.

(c) *Portable tanks:* DOT 51, 52, 53, 56, 57 and 60 portable tanks; and marine portable tanks conforming to 46 CFR 64.

DOT 57 portable tanks used for the transportation by vessel of Class 3, Packing Group II, materials must conform to the following:

(1) Each tank must have a minimum design pressure of 9 psig (62.1 kPa) and be equipped in accordance with § 178.253-4 of this subchapter, except that frangible devices are not authorized; and

(2) No pressure relief device may open at less than 5 psig (34.5 kPa).

§ 173.243 Bulk packaging for certain high hazard liquids and dual hazard liquids which pose a moderate hazard.

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of Subparts A and B of Part 173 of this subchapter and the special provisions specified in Column 7 of the § 172.101 Table.

(a) *Rail cars:* DOT Class 103, 104, 105, 107A, 109, 111, 112, 113, 114, and 115 tank car tanks; and Class 106 and 110 multi-unit tank car tanks. Gauging devices are required on DOT 103, 104 and 111 tank car tanks. Riveted tank car tanks are not authorized.

(b) *Cargo tanks:* Specification MC 304, MC 307, MC 330, MC 331, and MC 338 cargo tank motor vehicles; and MC 310, MC 311 or MC 312 cargo tank motor vehicles with tank design pressure of at least 25 psig (172.4 kPa).

(c) *Portable tanks:* DOT 51 portable tanks; and DOT 60 and marine portable tanks conforming to 46 CFR 64 with design pressure of at least 25 psig (172.4 kPa).

§ 173.244 Bulk packaging for certain pyrophoric liquids (Division 4.2), poisonous liquids with inhalation hazards (Division 6.1) and gases (Class 2).

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of Subparts A and B of Part 173 of this subchapter and the special provisions specified in Column 7 of the § 172.101 Table.

(a) DOT Classes 105, 107A, 109, 112, 113, and 114 tank car tanks; and Class 106 and 110 multi-unit tank car tanks. Riveted tank car tanks are not authorized.

(b) Specification MC 330, MC 331 and MC 338 cargo tank motor vehicles.

(c) DOT 51 portable tanks.

§ 173.245 Bulk packaging for extremely hazardous materials such as poisonous gases (Division 2.3).

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of Subparts A and B of Part 173 of this subchapter and the special provisions specified in Column 7 of the § 172.101 Table.

(a) DOT 105J500W, 112J500W and 112T500W tank car tanks; and DOT Class 106 and 110 multi-unit tank car tanks. Written procedures covering details of tank car appurtenances, dome fittings, and safety devices, and marking, loading, handling, inspection and testing practices, must be approved by the Director, OHMT, before any single unit tank car tank is offered for transportation.

(b) Cargo tank motor vehicles and portable tanks, when approved by the Director, OHMT.

§ 173.248 Ethylene oxide.

(a) When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of Subparts A and B of this part, the special provisions specified in Column 7 of the § 172.101 Table, and paragraphs (b) through (g) of this section:

(1) *Tank cars:* DOT 105J100W tank car tanks; DOT 105A100W or 111A100W4 tank car tanks built before September 1, 1981 and having a water capacity not exceeding 18,500 gallons (70,030.1 liters); and DOT 111J100W4 tank car tanks built before March 2, 1984.

(2) *Cargo tanks:* Specification MC 330 and MC 331 cargo tank motor vehicles.

(3) *Portable tanks:* DOT 51 portable tanks.

(b) The pressure relief devices must be set to function at 75 psig (517.1 kPa). Portable tanks fitted with non-reclosing devices made and in use prior to December 31, 1987, may continue to be used in ethylene oxide service.

(c) Outage must be sufficient to prevent the tank from becoming liquid full at 105 °F (40.6 °C). Consideration must be given to the lading temperature and solubility of inert gas padding in ethylene oxide as well as the partial pressure exerted by the gas padding.

(d) Each tank, loaded or empty, must be padded with dry nitrogen or other suitable inert gas of sufficient quantity to render the vapor pressure of the tank nonflammable up to 105 °F (40.6 °C). The gas used for padding must be free of impurities which may cause the ethylene

oxide to polymerize, decompose or undergo other violent chemical reaction.

(e) Copper, silver, mercury, magnesium or their alloys may not be used in any part of the tank or appurtenances that are normally in contact with the lading.

(f) Neoprene, natural rubber and asbestos gaskets are prohibited. All packing and gaskets must be made of materials which do not react with or lower the autoignition temperature of the lading.

(g) Each tank must be insulated with cork (at least 4 inches (10.2cm) thick), or mineral wool, fiberglass or other suitable insulation material of sufficient thickness so that the thermal conductance at 60 °F (15.6 °C) is not more than 0.075 Btu per hour per square foot per degree F. temperature differential. Portable tanks made and in use prior to December 31, 1987 equipped with fusible plugs instead of a safety relief valve or frangible disc, must have sufficient insulation so that the tank as filled for shipment will not rupture in a fire. The insulation on portable tanks or cargo tank motor vehicles must be protected with a steel jacket at least 0.100 inch (2.54mm) thick, or as required by the specification.

§ 173.249 Bromine.

When § 172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of Subparts A and B of Part 173 of this subchapter and the special provisions specified in Column 7 of the § 172.101 Table.

(a) DOT Class 105A300W or 105A500W tank cars. Class 105A500W tank cars may be equipped with manway cover plates, pressure relief valves, vent valves, and loading/unloading valves that are required on Class 105A-300W tank cars. Tank cars must conform with paragraphs (d) through (f) of this section.

(b) Specification MC 310, MC 311, MC 312 cargo tank motor vehicles conforming with paragraphs (d) through (f) of this section.

(c) Specification IM 101 intermodal portable tanks conforming with paragraphs (d) through (f) of this section.

(d) The tank must be made from nickel-clad or lead-lined steel plate. Nickel cladding or lead lining must be on the inside of the tank. Nickel cladding must comprise at least 20 percent of the required minimum total thickness. Nickel cladding must conform to ASTM Specification B 162-69. Lead lining must be at least 0.1875 inch (4.7625mm) thick. All tank equipment

and appurtenances in contact with the lading must be lined or made from metal not subject to deterioration by contact with lading.

(e) Maximum filling density is 300 percent of the tank's water capacity. Minimum filling density is 287 percent of the tank's water capacity. Maximum water capacity is 9,262 kilograms (20,400 pounds) for DOT 105A300W tank cars. Maximum quantity of lading in DOT 105A300W tank cars is 27,240 kilograms (60,000 pounds). Maximum water capacity is 16,980 kilograms (37,400 pounds) for DOT 105A500W tank cars and DOT 105A500W tank cars equipped as described in paragraph (a) of this section. Maximum quantity of lading in DOT 105A500W tank cars is 49,940 kilograms (110,000 pounds).

(f) Tank shell and head thickness for cargo tank motor vehicles and portable tanks must be at least 0.375 inch (9.525mm) excluding lead lining.

116. The title to Subpart G would be revised to read as follows:

Subpart G—Gases; Preparation and Packaging

§ 173.300 (Removed)

117. Section 173.300 would be removed.

118. In § 173.306, the phrase "Subpart N of this part" would be revised to read "paragraph (h) of this section" in the last sentence of paragraph (a)(1), and the introductory text of paragraph (a)(3) and the last sentence of the introductory text of paragraph (b) and paragraph (h) would be added to read as follows:

§ 173.306 Limited quantities of compressed gases.

(h) A limited quantity which conforms to the provisions of subparagraph (a)(1) or (a)(3) or paragraph (b) of this section and is a "consumer commodity" as defined in § 171.8 of this subchapter, may be renamed "consumer commodity" and reclassified as ORM-D material. In addition to the exceptions provided by paragraphs (a) and (b) of this section—

(1) Outside packagings are not required to be marked "INSIDE CONTAINERS COMPLY WITH PRESCRIBED REGULATIONS";

(2) Shipments of ORM-D materials are not subject to the shipping paper requirements of Subpart C of Part 172, unless offered or intended for transportation by aircraft; and

(3) Strong outer packagings as specified in this section and the marking requirements specified in § 172.312 are not required for ORM-D materials when unitized in cages, carts or similar

overpacks and when shipped by a private or contract motor carrier from a distribution center to a retail outlet.

§ 173.308 [Amended]

119. In paragraph (a) of § 173.308, the section reference "§ 173.21(e)" would be changed to "§ 173.21(i)".

120. In § 173.314, paragraphs (d) and (f) would be removed and reserved, paragraph (a) and paragraphs (b) (5) and (6) would be revised, the introductory text in paragraph (c) preceding the table would be revised, and paragraph (i) would be added to read as follows:

§ 173.314 Requirements for compressed gases in tank cars.

(a) *Definitions.* For definitions of compressed gases, see § 173.115.

(b) * * *

(5) Except as otherwise provided in this subchapter and except for DOT Class 106A and 110A multi-unit tank car tanks, each tank car which contains a Division 2.1 or 2.3 material or hydrogen fluoride must be marked with the name of contents as prescribed in § 172.330 of this subchapter.

(6) For single unit tank car tanks, built after December 30, 1971, which are loaded with a material which meets the definition for Division 2.1, gaskets for manway covers and for mounting of fittings must be made of heat resistance materials approved by the AAR Tank Car Committee.

(c) *Authorized gases, filling densities and tank cars.* A compressed gas offered for transportation in a tank car (for cryogenic liquids, see § 173.319) must be prepared in accordance with the applicable provisions of paragraphs (b) through (h) of this section, §§ 172.101, 173.10, 173.24b, and 173.31 of this subchapter, and the following table:

* * * * *

(d) [Reserved]

* * * * *

(f) [Reserved]

* * * * *

(i) Tank car tanks used for liquefied petroleum gas, butadiene, anhydrous ammonia, methylacetylene-propadiene, stabilized, chlorodifluoromethane, or vinyl chloride may, as an alternate, conform with the following special requirements:

(1) Safety relief valves may be set to the following pressures, provided the total valve discharge capacity is sufficient to prevent building up pressure in the tank in excess of 90 percent of the tank test pressure:

Safety relief valves, p.s.i.	DOT specifications		
	105A300W	112A340W, 114A340W	112A400W, 114A400W
Start-to-discharge pressure	247.5	280.5	330
Start-to-discharge tolerance	±7.5	±8.4	±10
Vapor tight pressure (minimum)	196	224	264
Flow rating pressure	270	306	360

(2) Gaskets for manway covers and for mounting of fittings must be made of heat resistance materials approved by the AAR Tank Car Committee.

121. In the table which appears in paragraph (c) of § 173.314 and the notes following it, the following changes are proposed:

a. The following entries and associated information are removed: Ammonia solution, Butadiene (all entries), Chlorodifluoroethane, Chlorodifluoromethane, Chloropentafluoroethane, Chlorotetrafluoroethane, Chlorotrifluoromethane, Crude nitrogen fertilizer solution (all entries), Dichlorodifluoromethane, Difluoroethane, Dimethylamine, Dimethyl ether, Fertilizer ammoniating solution (all entries), Hexafluoropropylene, Hexafluoropropylene oxide, Liquid hydrocarbon gas (all entries), Liquefied petroleum gas (all entries), Methylacetylene-propadiene, Methyl chloridemethylene chloride mixture, Methylamine, Nitrogen fertilizer solution (all entries), Refrigerant gas (all entries), Trifluorochloroethylene, Trimethylamine, Vinyl chloride, and Vinyl methyl ether.

b. For Anhydrous ammonia, "Note 15" is changed to "Note 21" in both places it appears.

c. For Chlorine, "Note 12" is changed to "Notes 12 and 30".

d. For Hydrogen chloride, "Note 17" is changed to "Notes 17 and 30".

e. For Nitrous oxide, "Note 6" is changed to "Notes 6 and 30".

f. For Sulfur dioxide, "Note 30" is added after "DOT-105A200-W".

g. The following entry is added: Column 1: "Flammable gases, not specifically provided for"; Column 2: "Note 21"; Column 3: "DOT Classes 105A and 110, Note 7, DOT Classes 105A, 112J, 112T, 114J, and 114T, Notes 4 and 23, DOT-111A100W4, Notes 4 and 23."

h. The following entry is added: Column 1: "Non-flammable gases, not specifically provided for"; Column 2: "Note 21"; Column 3: "DOT Classes 106A and 110, Note 25, DOT Classes

105A, 109A, 112A, and 114A; DOT-111A100W4.

- i. Notes 9, 14, 15, 18, 19, 22, 26, and 29 are removed.
- j. Note 20 is revised to read as follows: "The gas pressure at 130 °F in any uninsulated DOT Class 107A tank may not exceed seven-tenths of the marked test pressure of the tank, except that a tank may be charged with helium to a pressure 10 percent in excess of the marked maximum gas pressure at 130 °F of each tank."

k. Note 21 is revised to read as follows: "See paragraph (b)(1) of § 173.24b of this subchapter."

l. Note 30 is added to read as follows: "Each specification 105 tank car built after March 31, 1989, must conform to DOT Class 105J requirements."

122. In § 173.315, paragraph (a)(2) would be added to read as follows:

§ 173.315 Compressed gases in cargo tanks and portable tanks.

(a) * * *

(2) Other gases not listed by name in the above table shall be shipped in portable tanks or cargo tanks subject to the following conditions:

(i) Minimum packaging design pressure must not be less than—

(A) For a non-flammable and non-toxic gas lading, (Division 2.2), the vapor pressure at the reference temperature of the lading.

(B) For a gas which is toxic or flammable, (Division 2.1 or 2.3), or both, the vapor pressure at the reference temperature of the lading plus one percent or 25 psig (172.4 kPa), whichever is less, for each additional hazard.

(ii) Maximum permitted filling density may not exceed that specified in paragraph (c) of this section.

* * * * *

123. In Subpart G, §§ 173.321, 173.322, 173.323, 173.324, 173.335, 173.338, and 173.340 would be added, and §§ 173.334, 173.336 and 173.337 would be revised to read as follows:

§ 173.321 Ethylamine.

Ethylamine must be packaged as follows:

(a) In 1A1 drums which meet Packing Group I performance level requirements.

(b) In specification cylinders as prescribed for any compressed gas except acetylene.

§ 173.322 Ethyl chloride.

Ethyl chloride must be packaged in single or combination non-bulk packagings which meet Packing Group I performance level requirements, as follows:

(a) In 4C1, 4C2, 4D or 4F wooden boxes with glass, earthenware, or metal

inner receptacles not over 500 grams (1.1 pounds) capacity each.

(b) In 4G fiberboard boxes with glass, earthenware, or metal inner receptacles not over 500 grams (1.1 pounds) capacity each. Outer packagings may not exceed 30 kilograms (66.2 pounds) gross weight.

(c) In 1A1 drums of not over 100 liters (37.9 gallons) capacity each.

(d) In specification cylinders as prescribed for any compressed gas except acetylene.

§ 173.323 Ethylene oxide.

(a) For packaging ethylene oxide in non-bulk packagings, copper, silver mercury and their alloys shall not be used in any part of a packaging, valve, or other packaging appurtenance if that part is normally in contact with ethylene oxide liquid or vapor. All packaging and gaskets must be constructed of materials which do not react spontaneously with or lower the autoignition temperature of ethylene oxide.

(b) Ethylene oxide must be packaged as follows:

(1) In 4G fiberboard boxes with one inner glass ampoule or vial of no more than 100 grams (3.5 ounces) capacity cushioned with noncombustible material. The completed package must be capable of passing Packing Group I performance tests.

(2) In 4G fiberboard boxes constructed with top and bottom pads and perimeter liner. Inner packagings must be aluminum receptacles of no more than 135 grams (4.8 ounces) capacity cushioned with incombustible material. No more than 12 receptacles allowed in one box and no more than 10 boxes may be overpacked under the provisions of § 173.25 of this Part. Each completed package must be capable of passing Packing Group I performance tests.

(3) In 4C1, 4C2, 4D or 4F wooden boxes or 4G fiberboard boxes with inner metal receptacles of no more than 340 grams (12 ounces) capacity. The metal receptacle must be capable of withstanding no less than a 180 psig (1241.1 kPa) burst pressure. No more than 12 receptacles may be packed in one box and each receptacle may not be liquid full below 180 °F (82.2 °C). Each inner receptacle must be insulated and equipped with a relief device of the fusible plug type with yield temperature of 157 °F to 170 °F (69.4 °C to 76.7 °C).

The capacity of relief device and insulation must be such that the charged receptacle will not explode when tested by CGA Pamphlet C-14 method or other equivalent method. Each completed package must be capable of passing Packing Group I performance tests.

(4) In specification cylinders, as authorized for any compressed gas except acetylene. Cylinders must be seamless or welded steel (not brazed) with a nominal capacity of no more than 30 gallons (113.6 L) and may not be liquid full below 180 °F (82.2 °C). Cylinders over 3.79 liters (1 gallon) capacity must be equipped with eductor tubes and be insulated. Before each refilling, each cylinder must be tested for leakage at no less than 15 psig (103.4 kPa) pressure. In addition, each cylinder must be equipped with a fusible type relief device with yield temperature of 157 °F to 170 °F (69.4 °C to 76.7 °C). The capacity of the relief device and the effectiveness of the insulation must be such that the charged cylinder will not explode when tested by CGA Pamphlet C-14 method or other equivalent method.

(5) In 1A1 steel drums of no more than 61 gallons (230.9 L) and meeting Packing Group I performance standards. The drum must be lagged, of all welded construction with the inner shell having a minimum thickness of 2.0 mm (0.0787 inches) and the outer shell having a minimum thickness of 2.6 mm (0.1024 inches). Drums must be capable of withstanding a hydrostatic test pressure of 100 psig (689.5 kPa). Lagging must be of sufficient thickness so that the drum will not rupture when exposed to fire when filled with ethylene oxide and equipped with the required pressure relief device. The drum may not be liquid full below 185 °F (85 °C), and must be marked "THIS END UP" on the top head. Before each refilling, each drum must be tested for leakage at no less than 15 psig (103.4 kPa) pressure. Each drum must be equipped with a fusible type relief device with yield temperature of 157 °F to 170 °F (69.4 °C to 76.7 °C), and the capacity of the relief device must be such that the filled drum will not explode when tested by the method described in CGA Pamphlet C-14 or other equivalent method.

§ 173.324 Ethyl methyl ether.

Ethyl methyl ether must be packed as follows:

(a) In specification cylinders, as authorized for any compressed gas except acetylene; or

(b) In packagings as specified in § 173.201 which meet Packing Group I performance level requirements.

§ 173.334 Organic phosphates mixed with compressed gas.

Hexaethyl tetraphosphate, parathion, tetraethyl dithio pyrophosphate, tetraethyl pyrophosphate, or other Division 6.1 organic phosphates (including a compound or mixture), may

be mixed with a compressed gas which must be nonflammable. This mixture must not contain more than 20 percent by weight of organic phosphate and must be packaged in specification 3A240, 3AA240, 3B240, 4A240, 4B240, 4BA240, or 4BW240 cylinders meeting the following requirements.

(a) Each cylinder may be charged with not more than 5 kg (11.0 pounds) of the mixture, to a maximum filling density of not more than 80 percent of the water capacity;

(b) Each cylinder must be charged in compliance with § 173.301 (e) and (f);

(c) No cylinder may be equipped with an eduction tube or a fusible plug;

(d) No cylinder may be equipped with any valve unless the valve is a type approved by the Director, OHMT;

(e) Cylinders must be overpacked in a box so arranged to protect each valve or other closing device from damage. Except as provided in paragraph (f) of this section, no more than four cylinders may be packed in a box. Each box with its closing device protection must be sufficiently strong to protect all parts of each inside cylinder from deformation or breakage if the completed package were dropped 1.8 meters (5.91 feet) onto solid concrete, impacting at the weakest point.

(f) Cylinders may be packed in strong wooden boxes with valves or other closing devices protected from injury, with not more than twelve cylinders in one outside wooden box. An outer fiberboard box may be used when not more than four such cylinders are to be shipped in one packaging. Valves must be adequately protected. Box and valve protection must be of strength sufficient to protect all parts of inner packagings and valves from deformation or breakage resulting from a drop of at least 1.8 meters (5.91 feet) onto a concrete floor, impacting at the weakest point.

§ 173.335 Gas generator assemblies.

Gas generator assemblies (aircraft) containing liquefied nonflammable, non-toxic gas and a solid propellant cartridge shall be packaged as follows:

(a) The gas shall be packaged in specification steel cylinders authorized for any compressed gas except acetylene not exceeding 10.5 L (2.77 gallons) internal volume and having a minimum design burst pressure of 19,700 kPa (2,857 psi);

(b) Fittings must be protected against damage under conditions normally incident to transport, any trigger shall be fitted with a safety locking pin, and a non-propulsive plug shall be installed on the discharge tube; and

(c) Each complete unit must be individually and tightly packed to prevent movement in wooden boxes (4C1 or 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fiberboard boxes (4G), or plastic boxes, (4H1 and 4H2) of Packing Group II performance level, or in the original manufacturer's transit box.

§ 173.336 Nitrogen dioxide, liquid; nitrogen peroxide, liquid; and nitrogen tetroxide, liquid.

Nitrogen dioxide, liquid, nitrogen peroxide, liquid, and nitrogen tetroxide, liquid must be packed in specification cylinders as follows:

(a) As prescribed in § 173.192.

(b) Specification 3A480, 3AA480, 3AL1800, or 3E1800 metal cylinders, with valves removed, are authorized. Each valve opening must be closed by means of a solid metal plug with tapered thread properly luted to prevent leakages; valve protection cap must be used and be at least 4.76 mm (0.187 inches) thick gas-tight, with 4.76 mm (0.187 inches) faced seat for gasket and with United States standard form thread. Shipments in 3AL cylinders are authorized only when transported by highway or rail. Each cylinder must be cleaned in compliance with the requirements of Federal Specification RR-C-901b, paragraphs 3.7.2 and 3.8.2. Cleaning agents equivalent to those specified in RR-C-901b may be used; however, any cleaning agent must not be capable of reacting with oxygen. One cylinder selected at random from a group of 200 or less cleaned at the same time must be tested for oil contamination in accordance with Specification RR-C901b paragraph 4.4.2.3 and meet the standard of cleanliness specified.

§ 173.337 Nitric oxide.

Nitric oxide must be packed in Specification 3A1800, 3AA1800, 3E1800, or 3AL1800 cylinders charged to a pressure of not more than 5,170 kPa (749.7 psi) at 21.1 °C (70 °F). Cylinders must be equipped with a valve of stainless steel and valve seat of material which will not be deteriorated by contact with nitric oxide or nitrogen dioxide. Cylinders or valves may not be equipped with pressure relief devices of any type. Valve outlets must be sealed by a solid threaded cap or plug and an inert gasketing material. In addition—

(a) Specification 3E1800 cylinders must be overpacked in strong wooden boxes of such design as to protect valves from injury or accidental functioning under conditions incident to transportation. Each overpack must conform to § 173.25.

(b) Specification 3A, 3AA, and 3AL cylinders must have their valves protected by metal caps or other equally protective guards securely attached to the cylinders and be of sufficient strength to protect the valves from injury during transit, or by overpacking in strong wooden boxes of such design as to protect valves from injury or accidental functioning under conditions incident to transportation. Each overpack must conform to § 173.25. Shipments in 3AL cylinders are authorized only when transported by highway or rail.

(c) Each cylinder must be cleaned in compliance with the requirements of Federal Specification RR-C-901b, paragraphs 3.7.2 and 3.8.2. Cleaning agents equivalent to those specified in RR-C-901b may be used; however, any cleaning agent must not be capable of reacting with oxygen. One cylinder selected at random from a group of 200 or less cleaned at the same time must be tested for oil contamination in accordance with Specification RR-C-901b paragraph 4.4.2.3 and meet the standard of cleanliness specified.

§ 173.338 Tungsten hexafluoride.

Tungsten hexafluoride must be packed in specification 3A, 3AA, 3BN, or 3E (§§ 178.36, 178.37, 178.39, 178.42 of this subchapter) cylinders. Cylinders shall be equipped with a valve protection cap or be packed in a strong outside container complying with the provisions of § 173.40. Outlets of any valves must be capped or plugged. As an alternative, the cylinder opening may be closed by the use of a metal plug. Specification 3E cylinders must be shipped in an overpack that complies with the provisions of § 173.40.

§ 173.340 Tear gas devices.

(a) Packagings for tear gas devices must be approved prior to first shipment by the Director, OHMT.

(b) Tear gas devices may not be assembled with or packed in the same packaging with mechanically or manually operated firing, igniting, bursting, or other functioning elements unless of a type and design approved by the Director, OHMT.

(c) Tear gas grenades, tear gas candles, and similar devices must be packaged in packagings conforming to the requirements of Part 178 of this subchapter at the Packing Group II performance level, as follows:

(1) In UN 4C1, 4C2, 4D, or 4F metal-strapped wooden boxes. Functioning elements not assembled in grenades or devices must be in a separate compartment of these boxes, or in inner or separate outer boxes, UN 4C1 4C2.

4D, or 4F, and must be so packed and cushioned that they may not come in contact with each other or with the walls of the box during transportation. Not more than 50 tear gas devices and 50 functioning elements shall be packed in one box and the gross weight of the outer box may not exceed 35 kilograms (77.2 pounds).

(2) In a UN 1A2 metal drum. Functioning elements must be packed in a separate inner packaging or compartment. Not more than 24 tear gas devices and 24 functioning elements shall be packed in one outer drum and the gross weight of the drum may not exceed 35 kg. (77.2 pounds).

(3) In a UN 4G fiberboard box with inside tear gas devices meeting Specifications 2P or 2Q. Each inside packaging must be placed in fiberboard tubes fitted with metal ends or a fiber box with suitable padding. Not more than 30 inner packagings shall be packed in one outer box and the gross weight of the outer box may not exceed 16 kg (35.3 pounds).

(4) In other packagings of a type or design which is approved by the Director, OHMT.

(d) Tear gas devices may be shipped completely assembled when offered by or consigned to the U.S. Department of Defense, provided the functioning elements are so packed that they cannot accidentally function. Outer packagings must be UN 4C1, 4C2, 4D, or 4F metal-strapped wooden boxes.

Subpart H—[Removed]

124. Subpart H would be removed and reserved.

Subpart I—Radioactive Materials

§ 173.416 [Amended]

125. In § 173.416, the reference "§ 178.34" would be revised to read "§ 178.360" in paragraphs (e) and (g), the reference "§ 178.104" would be revised to read "§ 178.354" in paragraph (d), the reference "§ 178.194" would be revised to read "§ 178.362" in paragraphs (e) and (f), and the reference "§ 178.195" would be revised to read "§ 178.364" in paragraph (g).

126. In § 173.417, the reference "§ 178.34" would be revised to read "§ 178.360" in paragraphs (b)(1) and (b)(2); the reference "§ 178.103" or "§ 178.103-5(a)", as appropriate, would be revised to read "§ 178.352" in paragraphs (a)(1), (a)(6)(iii) and (b)(1); the reference "§ 178.104" would be revised to read "§ 178.354" in paragraphs (a)(2) and (b)(2); the references "§ 178.120" and "§ 178.121" would be revised to read "§ 178.356".

and "§ 178.358", respectively, in paragraphs (a)(8) and (b)(5); and the introductory text of paragraph (a)(6) would be revised to read as follows:

§ 173.417 Authorized packaging—fissile materials.

(a) * * *

(6) A 55-gallon 1A2 steel drum, subject to the following conditions:

* * * * *

127. Subparts J, K, L, M, N, and O would be removed.

Subparts J Through O—[Reserved]

Appendix B—[Amended]

128. In Appendix B:

(1) The title would be amended by changing the word "POLYETHYLENE" to "PLASTIC".

(2) In the first and second paragraphs, the word "polyethylene" would be revised to read "plastic" wherever it appears.

(3) In the second sentence of the first paragraph, the section reference "§ 173.24(d)(3)" would be revised to read "§ 173.24(e)(3)(iii)".

(4) In paragraph (6), the phrase "a height of 1.2 meters (3.94 feet) on to solid concrete" would be revised to read "a height determined in accordance with § 178.603(d) of this subchapter onto a rigid non-resilient, flat and horizontal surface."

129. Appendix C would be added, as follows:

Appendix C—Procedure for Base Level Vibration Testing

Base level vibration testing shall be conducted as follows:

1. Three sample packagings, selected at random, shall be filled and closed as for shipment. A non-hazardous material may be used in place of the hazardous material if it has essentially the same physical characteristics.

2. The three packages shall be placed on a vibrating platform that has a vertical double-amplitude (peak-to-peak displacement) of one inch. The packages should be constrained horizontally to prevent them from falling off the platform, but shall be left free to move vertically, bounce and rotate.

3. The test shall be performed for one hour at a frequency that causes the package to be raised from the vibrating platform to such a degree that a piece of material of approximately $\frac{1}{4}$ -inch (1.6 mm) thickness (such as steel strapping or paperboard) can be passed between the bottom of any package and the platform.

4. Immediately following the period of vibration, each package shall be removed from the platform, turned on its side and observed for any evidence of leakage.

5. Rupture or leakage from any of the packages constitutes failure of the test.

PART 176—CARRIAGE BY VESSEL

130. The authority citation for Part 176 would be revised to read as follows:

Authority: 49 U.S.C. 1803, 1804, 1805, 1806(b), 1808; 49 CFR Part 1.

131. Paragraph (d) of § 176.5 would be revised as follows:

§ 176.5 Application to vessels.

* * * *

(d) Except for transportation in bulk packagings (as defined in § 171.8 of this subchapter), the bulk carriage of hazardous materials by water is governed by 46 CFR Subchapters D, I, O and N.

* * * *

132. In § 176.83, paragraph (c)(6) would be added as follows:

§ 176.83 Segregation requirements for cargo vessels and passenger vessels.

* * * *

(c) * * *

(6) *Clear of living quarters.* "Clear of living quarters" means that the hazardous material must be located so that in the event of release of the material, leakage or vapors will not penetrate accommodations, machinery spaces or other work areas by means of entrances or other openings in bulkheads or ventilation ducts.

* * * *

133. Section 176.84 would be added as follows:

§ 176.84 Other requirements for stowage and segregation for cargo vessels and passenger vessels.

(a) *General.* When Column 10c of the § 172.101 Table refers to a numbered stowage provision for water shipments, the meaning and requirements of that provision are as set forth in this section. Terms in quotation marks are defined in § 176.83.

(b) *Table of provisions:*

Code	Provisions
1.....	(Reserved)
2.....	Temperature controlled material.
3.....	Do not stow with high explosives.
4.....	(Reserved)
5.....	(Reserved)
6.....	Emergency temperature material.
7.....	(Reserved)
8.....	Glass carboys not permitted on passenger vessels.
9.....	Glass carboys not permitted under deck.
10.....	Glass bottles not permitted under deck.
11.....	Keep away from heat and open flame.
12.....	Keep cool.
13.....	Keep dry.
14.....	Metal drums only permitted under deck.
15.....	May be stowed in portable magazine or metal locker.
16.....	No other cargo may be stowed in the same hold with this material.
17.....	(Reserved)
18.....	Prohibited on any vessel carrying explosives (except explosives in Division 1.4, Compatibility group S).
19.....	Protect from sparks and open flames.
20.....	Segregation same as for corrosives.
21.....	Segregation same as for flammable liquids.

Code	Provisions
22.....	Segregation same as for flammable liquids if flash-point below 61 °C (141 °F).
23.....	Segregation same as for flammable liquids if flash-point between 23 °C (73 °F) and 61 °C (141 °F).
24.....	Segregation same as for flammable solids.
25.....	Shade from radiant heat.
26.....	Stow "away from" acids.
27.....	Stow "away from" alkaline compounds.
28.....	(Reserved)
29.....	Stow "away from" ammonium compounds.
30.....	Stow "away from" animal or vegetable oils.
31.....	Stow "away from" combustible materials.
32.....	Stow "away from" copper, its alloys and its salts.
33.....	Stow "away from" fluorides.
34.....	Stow "away from" foodstuffs.
35.....	Stow "away from" all odor-absorbing cargo.
36.....	Stow "away from" heavy metals and their compounds.
37.....	Stow "away from" hydrazine.
38.....	Stow "away from" all other corrosives.
39.....	Stow "away from" liquid halogenated hydrocarbons.
40.....	Stow "clear of living quarters".
41.....	Stow "away from" mercury and its compounds.
42.....	Stow "away from" nitric acids and perchloric acids not exceeding 50% acid by weight.
43.....	Stow "away from" organic materials.
44.....	Stow "away from" oxidizers.
45.....	Stow "away from" permanganates.
46.....	Stow "away from" powdered metals.
47.....	Stow "away from" sodium compounds.
48.....	Stow "away from" sources of heat.
49.....	Stow "away from" corrosives.
50.....	Stow "away from" sources of heat where temperatures in excess of 55 °C (131 °F) for a period of 24 hours or more will be encountered.
51.....	Stow "separated from" acetylene.
52.....	Stow "separated from" acids.
53.....	Stow "separated from" alkaline compounds.
54.....	Stow "separated from" animal or vegetable oils.
55.....	Stow "separated from" ammonia.
56.....	Stow "separated from" ammonium compounds.
57.....	Stow "separated from" chlorine.
58.....	Stow "separated from" cyanides.
59.....	Stow "separated from" combustible materials.
60.....	Stow "separated from" chlorates, chlorites, chlorides, hypochlorites, nitrates, perchlorates, permanganates, and metallic powders.
61.....	Stow "separated from" corrosive materials.
62.....	Stow "separated from" diborane.
63.....	Stow "separated from" diethylene triamine.
64.....	Stow "separated from" explosives.
65.....	Stow "separated from" flammable substances.
66.....	Stow "separated from" flammable solids.
67.....	Stow "separated from" halides.
68.....	Stow "separated from" hydrogen.
69.....	Stow "separated from" hydrogen peroxide.
70.....	Stow "separated from" mercury salts.
71.....	Stow "separated from" nitric acid.
72.....	Stow "separated from" nitrogen compounds.
73.....	Stow "separated from" nitrogen compounds and chlorates.
74.....	Stow "separated from" oxidizers.
75.....	Stow "separated from" permanganates.
76.....	Stow "separated by a complete compartment or hold from" organic peroxides.
77.....	Stow "separated longitudinally by a complete compartment or hold from" explosives.
78.....	Stow "separated longitudinally by an intervening complete compartment or hold from" explosives.
79.....	The maximum net quantity in one package for this material shipped aboard a passenger vessel is limited to 50 pounds (22.7 kg).
80.....	Torpedoes must not be packed with other special fireworks.
81.....	Under deck stowage permitted only if an indicating substance such as chloropicrin has been added.
82.....	Under deck stowage is permitted only if containing not more than 36% by weight of hydrazine.
83.....	(Reserved)
84.....	Under deck stowage must be in well-ventilated space.
85.....	Under deck stowage must be in mechanically ventilated space.
86.....	Stow "separated by a complete compartment or hold from" explosives Class 1.3.
87.....	Stow "separated from" explosives except Class 1.4.
88.....	Stow "separated by a complete compartment or hold from" explosives except Class 1.4.
89.....	Segregation same as for oxidizers.
90.....	Stow "separated from" radioactive materials.
91.....	Stow "separated from" flammable solids.
92.....	Stow "separated from" powdered materials.
93.....	Stow not accessible to unauthorized persons on passenger vessels.

PART 178—[AMENDED]

134. The authority citation for Part 178 would continue to read as follows:

Authority: 49 U.S.C. 1803, 1804, 1805, 1806, 1808; 49 CFR Part 1, unless otherwise noted.

135. The title to Part 178 would be revised to read:

PART 178—SPECIFICATIONS FOR PACKAGINGS

136. Section 178.0-2 would be revised to read as follows:

§ 178.0-2 Applicability and manufacturers' responsibility.

(a) **Applicability.** Any person who performs a function prescribed in this part shall perform that function in accordance with this part.

(b) **Specification markings.** When this part requires that a packaging be marked with a DOT specification or UN standard marking (for example, DOT-3AL 1800-1234-XY, UN 1A1/Y1.4/150/85) compliance with that requirement is the responsibility of the manufacturer (see § 171.8 of this subchapter for definition of "manufacturer") of the packaging. Except as otherwise provided in this section, marking of the packaging by the manufacturer with the appropriate DOT or UN markings is the certification by the manufacturer that—

(1) All requirements of the DOT specification or the UN standard, including performance tests, are met; and

(2) All functions performed by the manufacturer conform to requirements specified in this part.

(c) **General requirements for packagings.** Manufacturers of packagings shall comply with general requirements for packagings prescribed in Subpart B of Part 173 (particularly, § 173.24) of this subchapter to the extent that those requirements apply to the design, construction and suitability for use of the specification or standard to which the packaging is manufactured.

(d) **Notification.** Except as specifically provided in § 178.337-18 and 178.340-10, the manufacturer of a packaging shall inform in writing each person to whom that packaging is transferred of all requirements of this part not met at the

time of transfer, and all actions which need to be taken for the packaging to conform to the requirements of this part. This notice must also include the type and dimensions of any closures needed to satisfy performance test requirements. Copies of these written statements shall be retained by the manufacturer for at least one year from date of issuance and must be open to inspection by a representative of the Department.

(e) Except as provided in paragraph (d) of this section, packagings which do not conform to the applicable specifications or standards in this part may not be marked to indicate such conformance.

137. Section 178.0-3 would be revised to read as follows:

§ 178.0-3 Marking of packagings.

(a) Each packaging manufactured to a DOT specification or a UN standard shall be marked as follows:

(1) In an unobstructed area, with letters, and numerals identifying the standards or specification (e.g. UN 1A1, DOT 4B240ET, etc.).

(2) With the name and address or symbol of the person making the mark. Symbols, if used, must be registered with the Director, OHMT.

(3) The markings must be stamped, embossed, burned, printed or otherwise marked on the packaging to provide adequate accessibility, permanency, contrast, and legibility so as to be readily apparent and understood.

(4) Unless otherwise specified, letters and numerals must be at least 12.0mm (0.47 inches) in height except that for packagings of less than or equal to 30 liters (7.9 gallons) capacity for liquids or 30 kilograms (66.1 pounds) capacity for solids the height must be at least 6.0mm (0.24 inches).

(b) Packagings may be marked with the United Nations symbol and packaging identification code as provided in this subchapter, in the ICAO Technical Instructions or in Annex 1 to the IMDG Code, provided the person applying these marks has established that the packaging conforms to the applicable provisions of this subchapter, the ICAO Technical Instructions or Annex 1 to the IMDG Code, respectively.

(1) If an indication of the State in whose territory the specified tests have been carried out, or of the State authorizing the allocation of the mark, is required, the letters "USA" shall be used.

(2) If an indication of the name of the manufacturer or other identification of the packaging as specified by the

competent authority is required, the name and address or symbol of the person making the mark shall be entered. Symbols, if used, must be registered with the Director, OHMT. Duplicate symbols are not authorized.

(3) Packagings manufactured to UN standards in accordance with this subchapter shall be marked as prescribed in § 178.503.

Subpart A—[Removed and Reserved]

138. Subpart A of Part 178 would be removed and reserved.

Subpart B—[Amended]

139. In Subpart B, § 178.34 would be redesignated as § 178.360 and moved to Subpart K. With the exception of §§ 178.33 and 178.33a, the remaining sections in Subpart B would be removed.

140. The title of § 178.33 would be revised to read as follows:

§ 178.33 Specification 2P; Inner nonrefillable metal receptacles.

* * * * *

141. The title to § 178.33a would be revised to read as follows:

§ 178.33a Specification 2Q; Inner nonrefillable metal receptacles.

* * * * *

Subpart D—[Amended]

142. In Subpart D, §§ 178.103 through 178.103-6, 178.104 through 178.104-5, 178.120 through 178.120-5 and 178.121 through 178.121-4 would be moved to Subpart K and be redesignated as §§ 178.352 through 178.352-6, 178.354 through 178.354-5, 178.356 through 178.356-5 and 178.358 through 178.358-4, respectively. Then Subpart D would be removed and reserved.

Subpart E—[Amended]

143. In Subpart E, §§ 178.194 through 178.194-7 and 178.195 through 178.195-6 would be moved to Subpart K and be redesignated as §§ 178.362 through 178.362-7 and 178.364 through 178.364-6 respectively. Then Subpart E would be removed and reserved.

Subparts F and G—[Removed and Reserved]

144. Subparts F and G would be removed and reserved.

Subpart H—Specifications for Portable Tanks

145. In § 178.270-11, paragraphs (c) (1) and (2) would be revised to read as follows:

§ 178.270-11 Pressure and vacuum relief devices.

(c) Pressure settings of relief devices.

(1) Primary pressure relief devices. The primary relief device required by paragraph (a) of this section must be set to function in the range of—

(i) No less than 67 percent and no greater than 83 percent of test pressure for tanks hydrostatically tested under § 178.270-13(a) at a pressure below 66 psig (455.1 kPa). Spring-loaded pressure relief valves must close after discharge at a pressure not less than 80 percent of start-to-discharge pressure.

(ii) No less than 67 percent and no greater than 74 percent of test pressure for tanks hydrostatically tested under § 178.270-13(a) at a pressure of 66 psig (455.1 kPa) or higher. Spring-loaded pressure relief valves must close after discharge at a pressure not less than 90 percent of start-to-discharge pressure.

(2) Emergency pressure relief devices. Each frangible disc, other than one used as a primary relief device in accordance with paragraph (b)(2) of this section, must be designed to burst at a pressure greater than 83 percent of and less than or equal to tank hydrostatic test pressure. Each spring-loaded pressure relief valve used as an emergency pressure relief device must be set to operate at no less than 83 percent of hydrostatic test pressure and be fully open at test pressure.

146. The title to Subpart K would be revised to read as follows:

Subpart K—Specifications for Packagings for Radioactive Materials

147. A new Subpart L would be added to read as follows:

Subpart L—Non-bulk Performance-oriented Packaging Standards

Sec.

- 178.500 Purpose, scope and definitions.
- 178.502 Identification codes for packagings.
- 178.503 Marking of packagings.
- 178.504 Standards for steel drums.
- 178.505 Standards for aluminum drums.
- 178.506 Standards for metal drums other than steel or aluminum.
- 178.507 Standards for plywood drums.
- 178.508 Standards for fiber drums.
- 178.509 Standards for plastic drums and jerricans.
- 178.510 Standards for wooden barrels.
- 178.511 Standards for steel jerricans.
- 178.512 Standards for steel or aluminum boxes.
- 178.513 Standards for boxes of natural wood.
- 178.514 Standards for plywood boxes.
- 178.515 Standards for reconstituted wood boxes.

Sec:

- 178.516 Standards for fiberboard boxes.
- 178.517 Standards for plastic boxes.
- 178.518 Standards for woven plastic bags.
- 178.519 Standards for plastic film bags.
- 178.520 Standards for textile bags.
- 178.521 Standards for paper bags.
- 178.522 Standards for composite packagings with inner plastic receptacles.
- 178.523 Standards for composite packagings with inner glass, porcelain, or stoneware receptacles.

Subpart L—Non-bulk Performance-oriented Packaging Standards**§ 178.500 Purpose, scope and definitions.**

(a) This subpart prescribes certain requirements for non-bulk packagings for hazardous materials. Standards for these packagings are based on the UN Recommendations.

(b) Terms used in this subpart are defined in § 171.8 of this subchapter.

§ 178.502 Identification codes for packagings.

(a) Identification codes for designating types of packagings consist of the following:

(1) A numeral indicating the type of packaging, as follows:

- (i) "1" means a drum.
- (ii) "2" means a wooden barrel.
- (iii) "3" means a jerrican.
- (iv) "4" means a box.
- (v) "5" means a bag.
- (vi) "6" means a composite packaging.
- (vii) "7" means a pressure receptacle.

(2) A capital letter indicating the material of construction, as follows:

- (i) "A" means steel (all types and surface treatments).
- (ii) "B" means aluminum.
- (iii) "C" means natural wood.
- (iv) "D" means plywood.
- (v) "F" means reconstituted wood.
- (vi) "G" means fiberboard.
- (vii) "H" means plastic.
- (viii) "L" means textile.
- (ix) "M" means paper, multiwall.
- (x) "N" means metal (other than steel or aluminum).
- (xi) "P" means glass, porcelain or stoneware.

(3) A numeral indicating the category of packaging within the type to which the packaging belongs. For example, for steel drums ("1A"), "1" indicates a non-removable head drum (i.e., "1A1") and "2" indicates a removable head drum (i.e., "1A2").

(b) For composite packagings, two capital letters are used in sequence in the second position of the code, the first indicating the material of the inner receptacle and the second, that of the outer packaging. For example, a plastic receptacle in a steel drum is designated "6HA1".

(c) For combination packagings, only the code number for the outer packaging is used.

(d) Identification codes are set forth in the standards for packagings in §§ 178.504 through 178.523.

§ 178.503 Marking of packagings.

(a) The manufacturer shall mark every package that is required to conform to a UN standard of this subpart in a durable and clearly visible manner, with the following information and in the sequence presented:

(1) The United Nations symbol as illustrated in paragraph (d) of this section (for metal receptacles, the letters UN may be applied in place of the symbol);

(2) A packaging identification code designating the type of packaging, the material of construction and, when appropriate, the category of packaging under §§ 178.504 through 178.523 within the type to which the packaging belongs;

(3) A letter identifying the performance standard under which the packaging has been successfully tested, as follows:

(i) X—for packagings meeting Packing Group I, II and III tests;

(ii) Y—for packagings meeting Packing Group II and III tests; or

(iii) Z—for packagings only meeting Packing Group III tests;

(4) A designation of the specific gravity or mass for which the packaging has been tested, as follows:

(i) For packaging without inner packagings intended to contain liquids (except viscous liquids), the designation shall be the specific gravity rounded down to the first decimal but may be omitted when the specific gravity does not exceed 1.2; and

(ii) For packagings intended to contain viscous liquids, solids, or inner packagings, the designation must be the maximum gross mass in kilograms;

(5) Either a letter "S" designating that the packaging is intended only for the transport of solids or inner packagings, or the test pressure in kilopascals rounded off to the nearest 10 kilopascals of the hydrostatic pressure test that the packaging has successfully passed;

(6) The last two digits of the year of manufacture. Packagings of types 1H and 3H shall also be marked with the month of manufacture in any appropriate manner; this may be marked on the packaging in a different place from the remainder of the markings;

(7) The letters "USA" (indicating that the packaging was marked pursuant to the provisions of this subchapter);

(8) The name and address or symbol of the person applying the marks required by this section. Symbols, if

used, must be registered in advance with the Director, OHMT;

(9) For metal or plastic drums or jerricans intended for reuse the minimum thickness of the packaging material, expressed in millimeters and abbreviated "mm", and

(10) For drums intended as packagings for nitric acid, the tare weight in kilograms preceded by the letters TW.

(b) For a reusable packaging likely to undergo a reconditioning process, the markings required in paragraphs (a)(1) through (a)(6) and (a)(9) of this section shall be applied in a permanent manner (e.g., by embossment) able to withstand the reconditioning process. For a packaging with a removable head, the markings may not be applied to the removable head.

(c) If a package is reconditioned, it shall be marked by the reconditioner near the marks required in paragraphs (a) (1) through (6) of this section with the following additional information:

(1) The name of the country in which the reconditioning was performed (in the United States, use the letters "USA");

(2) The name and address or symbol of the reconditioner. Symbols, if used, shall be registered in advance with the Director, OHMT;

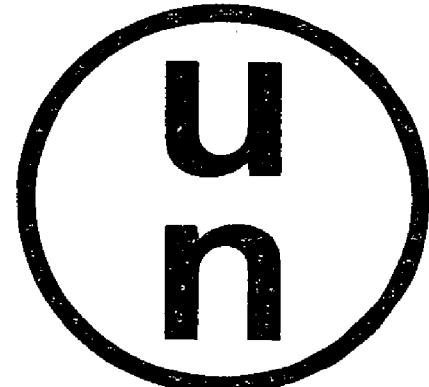
(3) The month and last two digits of the year of reconditioning;

(4) The letter "R"; and

(5) For every packaging successfully passing a leakproofness test, the additional letter "L".

(d) The following are examples of symbols and required markings:

(1) The United Nations symbol is:



(2) Examples of markings for a new packaging are as follows:

(i) For a fiberboard box designed to contain an inner receptacle:

UN 4G/Y145/S/83
USA/RA

(as in § 178.503(a)(1) through (a)(8)).
 (ii) For a steel drum designed to contain liquids:

UN 1A1/Y1.4/150/83
 USA/VL824
 1MM

(as in § 178.503(a)(1) through (a)(9)).
 (iii) For a steel drum to transport solids, viscous liquids or inner packagings:

UN 1A2/Y150/S/83
 USA/VL825

(as in § 178.503(a)(1) through (a)(8)).
 (3) Examples of markings for reconditioned packagings are as follows:

UN 1A1/Y1.4/150/83
 USA/VL824 1mm
 USA/RB/10-85RL

(as in § 178.503(c)(1), (2), (3) and (4)).

§ 178.504 Standards for steel drums.

(a) The following are identification codes for steel drums:

(1) 1A1 for a non-removable head steel drum; and,

(2) 1A2 for a removable head steel drum.

(b) Construction requirements for steel drums are as follows:

(1) Body and heads shall be constructed of steel sheet of suitable type and adequate thickness in relation to the capacity and intended use of the drum.

(2) Body seams shall be welded on drums designed to contain more than 40 liters (10.6 gallons) of liquids. Body seams shall be mechanically seamed or welded on drums intended to contain only solids or 40 liters (10.6 gallons) or less of liquids.

(3) Chimes shall be mechanically seamed or welded. Separate reinforcing rings may be applied.

(4) The body of a drum of a capacity greater than 60 liters (15.9 gallons) must, in general, have at least two expanded rolling hoops, or alternatively, at least two separate rolling hoops. If there are separate rolling hoops, they shall be fitted tightly on the body and so secured that they cannot shift. Rolling hoops may not be spot welded.

(5) Openings for filling, emptying and venting in the bodies or heads of non-removable head (1A1) drums may not exceed 7.0 centimeters (2.76 inches) in diameter. Drums with larger openings are considered to be of the removable head type (1A2). Closures for openings in the bodies and heads of drums shall be so designed and applied that they will remain secure and leakproof under normal conditions of transport. Closure flanges shall be mechanically seamed or welded in place. Gaskets or other sealing elements shall be used with closures unless the closure is inherently leakproof.

(6) Closure devices for removable head drums shall be so designed and applied that they will remain secure and drums will remain leakproof under normal conditions of transport. Gaskets or other sealing elements shall be used with all removable heads.

(7) If materials used for body, heads, closures, and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments shall be applied. These coatings or treatments shall retain their protective properties under normal conditions of transport.

(8) Maximum capacity of drum: 450 liters (118.9 gallons).

(9) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.505 Standards for aluminum drums.

(a) The following are the identification codes for aluminum drums:

(1) 1B1 for a non-removable head aluminum drum; and

(2) 1B2 for a removable head aluminum drum.

(b) Construction requirements for aluminum drums are as follows:

(1) Body and heads shall be constructed of aluminum at least 99 percent pure or an aluminum base alloy. Material shall be of suitable type and adequate thickness in relation to the capacity and the intended use of the drum.

(2) All seams shall be welded. Chime seams, if any, shall be reinforced by the application of separate reinforcing rings.

(3) The body of a drum of a capacity greater than 60 liters (15.9 gallons) must, in general, have at least two expanded rolling hoops, or alternatively, at least two separate rolling hoops. If there are separate rolling hoops, the hoops shall be fitted tightly on the body and so secured that they cannot shift. Rolling hoops shall not be spot welded.

(4) Openings for filling, emptying, or venting in the bodies or heads of non-removable head (1B1) drums may not exceed 7.0 centimeters (2.76 inches) in diameter. Drums with larger openings are considered to be of the removable head type (1B2). Closures for openings in the bodies and heads of drums shall be so designed and applied that they will remain secure and leakproof under normal conditions of transport. Closure flanges shall be welded in place so that the weld provides a leakproof seam. Gaskets or other sealing elements shall be used with closures unless the closure is inherently leakproof.

(5) Closure devices for removable head drums shall be so designed and applied that they remain secure and drums remain leakproof under normal conditions of transport. Gaskets or other

sealing elements shall be used with all removable heads.

(6) Maximum capacity of drum: 450 liters (118.9 gallons).

(7) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.506 Standards for metal drums other than steel or aluminum.

(a) The following are the identification codes for metal drums other than steel or aluminum:

(1) 1N1 for a non-removable head metal drum.

(2) 1N2 for a removable head metal drum.

(b) Construction requirements for metal drums other than steel or aluminum are as follows:

(1) Body and heads shall be constructed of metal (other than steel or aluminum) of suitable type and adequate thickness in relation to the capacity and the intended use of the drum.

(2) All seams shall be welded. Chime seams, if any, shall be reinforced by the application of separate reinforcing rings.

(3) The body of a drum of a capacity greater than 60 liters (15.9 gallons) must, in general, have at least two expanded rolling hoops, or alternatively, at least two separate rolling hoops. If there are separate rolling hoops, the hoops shall be fitted tightly on the body and so secured that they cannot shift. Rolling hoops shall not be spot welded.

(4) Openings for filling, emptying, or venting in the bodies or heads of non-removable head (1N1) drums may not exceed 7.0 centimeters (2.76 inches) in diameter. Drums with larger openings are considered to be of the removable head type (1N2). Closures for openings in the bodies and heads of drums shall be so designed and applied that they will remain secure and leakproof under normal conditions of transport. Closure flanges shall be welded in place so that the weld provides a leakproof seam. Gaskets or other sealing elements shall be used with closures unless the closure is inherently leakproof.

(5) Closure devices for removable head drums shall be so designed and applied that they remain secure and drums remain leakproof under normal conditions of transport. Gaskets or other sealing elements shall be used with all removable heads.

(6) Maximum capacity of drum: 450 liters (118.9 gallons).

(7) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.507 Standards for plywood drums.

(a) The identification code for a plywood drum is 1D.

(b) Construction requirements for plywood drums are as follows:

(1) The wood used must be well-seasoned, commercially dry and free from any defect likely to lessen the effectiveness of the drum for the purpose intended. A material other than plywood may be used for the manufacture of the heads, if it is of strength and durability at least equivalent to the plywood.

(2) At least two-ply plywood shall be used for the body and at least three-ply plywood for the heads; the plies shall be firmly glued together, with their grains crosswise.

(3) The body and heads of the drum and their joints must be of a design appropriate to the capacity of the drum and its intended use.

(4) In order to prevent sifting of the contents, lids shall be lined with kraft paper or some other equivalent material which shall be securely fastened to the lid and extend to the outside along its full circumference.

(5) Maximum capacity of drum: 250 liters (66.0 gallons).

(6) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.508 Standards for fiber drums.

(a) The identification code for a fiber drum is 1G.

(b) Construction requirements for fiber drums are as follows:

(1) The body of the drum shall be constructed of multiple plies of heavy paper or fiberboard (without corrugations) firmly glued or laminated together and may include one or more protective layers of bitumen, waxed kraft paper, metal foil, plastic material, or similar materials.

(2) Heads must be of natural wood, fiberboard, metal, plywood or plastic material and may include one or more protective layers of bitumen, waxed kraft paper, metal foil, plastic material, or similar material.

(3) The body and heads of the drum and their joints must be of a design appropriate to the capacity and intended use of the drum.

(4) The assembled packaging must be sufficiently water-resistant so as not to delaminate under normal conditions of transport.

(5) Maximum capacity of drum: 450 liters (118.9 gallons).

(6) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.509 Standards for plastic drums and jerricans.

(a) The following are identification codes for plastic drums and jerricans:

(1) 1H1 for a non-removable head plastic drum;

(2) 1H2 for a removable head plastic drum;

(3) 3H1 for a non-removable head jerrican; and

(4) 3H2 for a removable head jerrican.

(b) Construction requirements for plastic drums and jerricans are as follows:

(1) The packaging shall be manufactured from suitable plastic material and be of adequate strength in relation to its capacity and intended use. No used material other than production residues or regrind from the same manufacturing process may be used. The packaging must be adequately resistant to aging and to degradation caused either by the substance contained or by ultra-violet radiation. Any permeation of the substance contained must not constitute a danger under normal conditions of transport.

(2) If protection against ultra-violet radiation is required, it shall be provided by the addition of carbon black or other suitable pigments or inhibitors. These additives must be compatible with the contents and remain effective throughout the life of the packaging. Where use is made of carbon black, pigments or inhibitors other than those used in the manufacture of the design type, retesting may be waived if the carbon black content does not exceed 2 percent by mass or if the pigment content does not exceed 3 percent by mass; the content of inhibitors of ultra-violet radiation is not limited.

(3) Additives serving purposes other than protection against ultra-violet radiation may be included in the composition of the plastic material provided they do not adversely affect the chemical and physical properties of the packaging material.

(4) The wall thickness at every point of the packaging must be appropriate to its capacity and its intended use, taking into account the stresses to which each point is liable to be exposed.

(5) Openings for filling, emptying and venting in the bodies or heads of non-removable head (1H1) drums and jerricans (3H1) may not exceed 7.0 centimeters (2.76 inches) in diameter. Drums and jerricans with larger openings are considered to be of the removable head type (1H2 and 3H2). Closures for openings in the bodies or heads of drums and jerricans shall be designed and applied that they remain secure and leakproof under normal conditions of transport. Gaskets or other sealing elements shall be used with closures unless the closure is inherently leakproof.

(6) Closure devices for removable head drums and jerricans shall be so

designed and applied that they remain secure and leakproof under normal conditions of transport. Gaskets shall be used with all removable heads unless the drum or jerrican design is such that when the removable head is properly secured, the drum or jerrican is inherently leakproof.

(7) Maximum capacity of drums and jerricans: 1H1, 1H2: 450 liters (118.9 gallons); 3H1, 3H2: 60 liters (15.9 gallons).

(8) Maximum net mass: 1H1, 1H2: 400 kg (881.8 pounds); 3H1, 3H2: 120 kg (264.6 pounds).

§ 178.510 Standards for wooden barrels.

(a) The following are identification codes for wooden barrels:

(1) 2C1 for a bung type wooden barrel; and

(2) 2C2 for a slack type (removable head) wooden barrel.

(b) Construction requirements for wooden barrels are as follows:

(1) The wood used must be of good quality, straight-grained, well-seasoned and free from knots, bark, rotten wood, sapwood or other defects likely to lessen the effectiveness of the barrel for the purpose intended.

(2) The body and heads must be of a design appropriate to the capacity and intended use of the barrel.

(3) Staves and heads shall be sawn or cleft with the grain so that no annual ring extends over more than half the thickness of a stave or head.

(4) Barrel hoops must be of steel or iron of good quality. The hoops of 2C2 barrels may be of a suitable hardwood.

(5) For wooden barrels 2C1, the diameter of the bung-hole may not exceed half the width of the stave in which it is placed.

(6) For wooden barrels 2C2, heads must fit tightly into crozes.

(7) Maximum capacity of barrel: 250 liters (66.0 gallons)

(8) Maximum net mass: 400 kilograms (881.8 pounds)

§ 178.511 Standards for steel jerricans.

(a) The following are identification codes for steel jerricans:

(1) 3A1 for a non-removable head jerrican; and

(2) 3A2 for a removable head jerrican.

(b) Construction requirements for steel jerricans are as follows:

(1) Body and heads shall be constructed of steel sheet of suitable type and adequate thickness in relation to the capacity of the jerrican and intended use.

(2) Chimes of all jerricans shall be mechanically seamed or welded. Body seams of jerricans intended to carry

more than 40 liters (10.6 gallons) of liquid shall be welded. Body seams of jerricans intended to carry 40 liters (10.6 gallons) or less shall be mechanically seamed or welded.

(3) Openings in jerricans (3A1) may not exceed 7.0 centimeters (2.76 inches) in diameter. Jerricans with larger openings are considered to be of the removable head type. Closures shall be so designed that they remain secure and leakproof under normal conditions of transport. Gaskets or other sealing elements shall be used with closures, unless the closure is inherently leakproof.

(4) If materials used for body, heads, closures and fittings are not in themselves compatible with the contents to be transported, suitable internal protective coatings or treatments shall be applied. These coatings or treatments must retain their protective properties under normal conditions of transport.

(5) Maximum capacity of jerrican: 60 liters (15.9 gallons).

(6) Maximum net mass: 120 kilograms (264.6 pounds).

§ 178.512 Standards for steel or aluminum boxes.

(a) The following are identification codes for steel or aluminum boxes:

(1) 4A1 for an unlined and uncoated steel box;

(2) 4A2 for a steel box with inner liner or coating;

(3) 4B1 for an unlined and uncoated aluminum box; and

(4) 4B2 for an aluminum box with inner liner or coating.

(b) Construction requirements for steel or aluminum boxes are as follows:

(1) The strength of the metal and the construction of the box must be appropriate to the capacity and intended use of the box.

(2) Boxes 4A2 and 4B2 shall be lined with fiberboard or felt packing pieces, as required, or shall have an inner liner or coating of suitable material. If a double seamed metal liner is used, steps shall be taken to prevent the ingress of substances, particularly explosives, into the recesses of the seams.

(3) Closures may be of any suitable type, and must remain secure under normal conditions of transport.

(4) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.513 Standards for boxes of natural wood.

(a) The following are the identification codes for boxes of natural wood:

(1) 4C1 for an ordinary box; and

(2) 4C2 for a box with sift-proof walls.

(b) Construction requirements for boxes of natural wood are as follows:

(1) The wood used must be well-seasoned, commercially dry and free from defects that would materially lessen the strength of any part of the box. The strength of the material used and the method of construction must be appropriate to the capacity and intended use of the box. The tops and bottoms may be made of water-resistant reconstituted wood such as hard board, particle board or other suitable type.

(2) Each part of the 4C2 box must be one piece or equivalent. Parts are considered equivalent to one piece when one of the following methods of glued assembly is used: Linderman joint, tongue and groove joint, ship lap or rabbet joint, or butt joint with at least two corrugated metal fasteners at each joint.

(3) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.514 Standards for plywood boxes.

(a) The identification code for a plywood box is 4D.

(b) Construction requirements for plywood boxes are as follows:

(1) Plywood used must be at least 3 ply. It shall be made from well-seasoned rotary cut, sliced or sawn veneer, commercially dry and free from defects that would materially lessen the strength of the box. The strength of the material used and the method of construction must be appropriate to the capacity and intended use of the box. All adjacent plies shall be glued with water-resistant adhesive. Other suitable materials may be used together with plywood in the construction of boxes. Boxes shall be nailed or secured to corner posts or ends or assembled with other equally suitable devices.

(2) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.515 Standards for reconstituted wood boxes.

(a) The identification code for a reconstituted wood box is 4F.

(b) Construction requirements for reconstituted wood boxes are as follows:

(1) The walls of boxes shall be made of water-resistant, reconstituted wood such as hardboard, particle board, or other suitable type. The strength of the material used and the method of construction must be appropriate to the capacity of the boxes and their intended use.

(2) Other parts of the box may be made of other suitable materials.

(3) Boxes shall be securely assembled by means of suitable devices.

(4) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.516 Standards for fiberboard boxes.

(a) The identification code for a fiberboard box is 4G.

(b) Construction requirements for fiberboard boxes are as follows:

(1) Strong, solid or double-faced corrugated fiberboard (single or multiwall) shall be used, appropriate to the capacity and intended use of the box. The water resistance of the outer surface must be such that the increase in mass, as determined in a test carried out over a period of 30 minutes by the Cobb method of determining water absorption, is not greater than 155 grams per square meter (0.0316 pounds per square foot)—see ISO International Standard 535-1976 (E). It must have proper bending qualities. Fiberboard shall be cut, creased without scoring, and slotted so as to permit assembly without cracking, surface breaks, or undue bending. The fluting of corrugated fiberboard shall be firmly glued to the facings.

(2) The ends of boxes may have a wooden frame or be entirely of wood. Reinforcements of wooden battens may be used.

(3) Manufacturing joints. (i) Manufacturing joints in the bodies of boxes shall be—

(A) Taped;
(B) Lapped and glued; or
(C) Lapped and stitched with metal staples.

(ii) Lapped joints shall have an appropriate overlap.

(iii) Where closing is effected by gluing or taping, a water resistant adhesive shall be used.

(4) Boxes shall be designed so as to provide a snug fit to the contents.

(5) Maximum net mass: 400 kilograms (881.8 pounds).

§ 178.517 Standards for plastic boxes.

(a) The following are identification codes for plastic boxes:

(1) 4H1 for an expanded plastic box; and

(2) 4H2 for a solid plastic box.

(b) Construction requirements for plastic boxes are as follows:

(1) The box shall be manufactured from suitable plastic material and be of adequate strength in relation to its capacity and intended use. The box must be adequately resistant to ageing and to degradation caused either by the substance contained or by ultra-violet radiation.

(2) An expanded plastic box must consist of two parts made of a moulded expanded plastic material: A bottom section containing cavities for the inner receptacles, and a top section covering and interlocking with the bottom

section. The top and bottom sections shall be so designed that the inner receptacles fit snugly. The closure cap for any inner receptacle may not be in contact with the inside of the top section of the box.

(3) For transportation, an expanded plastic box shall be closed with a self-adhesive tape having sufficient tensile strength to prevent the box from opening. The adhesive tape must be weather resistant and its adhesive compatible with the expanded plastic material of the box. Other closing devices at least equally effective may be used.

(4) For solid plastic boxes, protection against ultra-violet radiation, if required, shall be provided by the addition of carbon black or other suitable pigments or inhibitors. These additives must be compatible with the contents and remain effective throughout the life of the box. Where use is made of carbon black pigment or inhibitors other than those used in the manufacture of the tested design type, retesting may be waived if the carbon black content does not exceed 2 percent by mass or if the pigment content does not exceed 3 percent by mass; the content of inhibitors of ultra-violet radiation is not limited.

(5) Additives serving purposes other than protection against ultra-violet radiation may be included in the composition of the plastic material if they do not adversely affect the material of the box. Addition of these additives does not change the design type.

(6) Solid plastic boxes must have closure devices made of a suitable material of adequate strength and so designed as to prevent the box from unintentional opening.

(7) Maximum net mass 4H1: 60 kg (132.3 pounds); 4H2: 400 kg (881.8 pounds).

§ 178.518 Standards for woven plastic bags.

(a) The following are identification codes for woven plastic bags:

(1) 5H1 for an unlined or non-coated woven plastic bag;

(2) 5H2 for a sift proof woven plastic bag; and

(3) 5H3 for a water-resistant woven plastic bag.

(b) Construction requirements for woven plastic fabric bags are as follows:

(1) Bags shall be made from stretched tapes or monofilaments of a suitable plastic material. The strength of the material used and the construction of the bag must be appropriate to the capacity and intended use of the bag.

(2) If the fabric is woven flat, the bags shall be made by sewing or some other

method ensuring closure of the bottom and one side. If the fabric is tubular, the bag shall be closed by sewing, weaving, or some other equally strong method of closure.

(3) Bags, sift-proof, 5H2 shall be made sift-proof by appropriate means such as use of paper or a plastic film bonded to the inner surface of the bag or one or more separate inner liners made of paper or plastic material.

(4) Bags, water-resistant, 5H3: To prevent the entry of moisture, the bag shall be made waterproof by appropriate means, such as separate inner liners of water-resistant paper (e.g., waxed kraft paper, double-tarred kraft paper or plastic-coated kraft paper), or plastic film bonded to the inner or outer surface of the bag, or one or more inner plastic liners.

(5) Maximum net mass: 50 kilograms (110.2 pounds).

§ 178.519 Standards for plastic film bags.

(a) The identification code for a plastic film bag is 5H4.

(b) Construction requirements for plastic film bags are as follows:

(1) Bags shall be made of a suitable plastic material. The strength of the material used and the construction of the bag must be appropriate to the capacity and the intended use of the bag. Joints and closures must be capable of withstanding pressures and impacts liable to occur under normal conditions of transportation.

(2) Maximum net mass: 50 kilograms (110.2 pounds).

§ 178.520 Standards for textile bags.

(a) The following are identification codes for textile bags:

(1) 5L1 for an unlined or non-coated textile bag;

(2) 5L2 for a sift-proof textile bag; and

(3) 5L3 for a water-resistant textile bag.

(b) Construction requirements for textile bags are as follows:

(1) The textiles used must be of good quality. The strength of the fabric and the construction of the bag must be appropriate to the capacity and intended use of the bag.

(2) Bags, sift-proof, 5L2: The bag shall be made sift-proof, by appropriate means, such as by the use of paper bonded to the inner surface of the bag by a water-resistant adhesive such as bitumen, plastic film bonded to the inner surface of the bag, or one or more inner liners made of paper or plastic material.

(3) Bags, water-resistant, 5L3: To prevent entry of moisture, the bag shall be made waterproof by appropriate means, such as by the use of separate inner liners of water-resistant paper

(e.g., waxed kraft paper, tarred paper, or plastic-coated kraft paper), or plastic film bonded to the inner surface of the bag, or one or more inner liners made of plastic material.

(4) Maximum net mass: 50 kilograms (110.2 pounds).

§ 178.521 Standards for paper bags.

(a) The following are identification codes for paper bags:

(1) 5M1 for a multiwall paper bag; and

(2) 5M2 for a multiwall-water-resistant paper bag.

(b) Construction requirements for paper bags are as follows:

(1) Bags shall be made of a suitable kraft paper, or of an equivalent paper with at least three plies. The strength of the paper and the construction of the bag must be appropriate to the capacity and intended use of the bag. Seams and closures must be sift-proof.

(2) Paper bags 5M2: To prevent the entry of moisture, a bag of four plies or more shall be made waterproof by the use of either a water-resistant ply as one of the two outermost plies or a water-resistant barrier made of a suitable protective material between the two outermost plies. A 5M2 bag of three plies shall be made waterproof by the use of a water-resistant ply as the outermost ply. When there is danger of the lading reacting with moisture, or when it is packed damp, a water-resistant ply or barrier shall be placed next to the substance. Seams and closures must be waterproof.

(3) Maximum net mass: 50 kilograms (110.2 pounds).

§ 178.522 Standards for composite packagings with inner plastic receptacles.

(a) The following are the identification codes for composite packagings with inner plastic receptacles:

(1) 6HA1 for a plastic receptacle within a protective steel drum;

(2) 6HA2 for a plastic receptacle within a protective steel crate or box;

(3) 6HB1 for a plastic receptacle within a protective aluminum drum;

(4) 6HB2 for a plastic receptacle within a protective aluminum crate or box;

(5) 6HC for a plastic receptacle with a protective wooden box;

(6) 6HD1 for a plastic receptacle within a protective plywood drum;

(7) 6HD2 for a plastic receptacle within a protective plywood box;

(8) 6HG1 for a plastic receptacle within a protective fiber drum;

(9) 6HG2 for a plastic receptacle within a protective fiberboard box; and

(10) 6HH for a plastic receptacle within a protective plastic drum.

(b) Construction requirements for composite packagings with inner receptacles of plastic are as follows:

(1) Inner receptacles shall be constructed under the applicable construction requirements prescribed in § 178.509(b) (1) through (7).

(2) The inner plastic receptacle must fit snugly inside the outer packaging which must be free of any projections which may abrade the plastic material.

(3) Outer packagings shall be constructed as follows:

(i) 6HA1 or 6HB1: Protective packaging must conform to the requirements for steel drums in § 178.504(b), or aluminum drums in § 178.505(b).

(ii) 6HA2 or 6HB2: Protective packagings with steel or aluminum crate must conform to the requirements for steel or aluminum boxes found in § 178.512(b).

(iii) 6HC: Protective packaging must conform to the requirements for wooden boxes in § 178.513(b).

(iv) 6HD1: Protective packaging must conform to the requirements for plywood drums, in § 178.507(b).

(v) 6HD2: Protective packaging must conform to the requirements of plywood boxes, in § 178.514(b).

(vi) 6HG1: Protective packaging must conform to the requirements for fiber drums, in § 178.509(b).

(vii) 6HG2: Protective packaging must conform to the requirements for fiberboard boxes, in § 178.516(b).

(viii) 6HH: Protective packaging must conform to the requirements for plastic drums, § 178.509(b).

(4) Maximum capacity of inner receptacles is as follows: 6HA1, 6HB1, 6HD1, 6HG1, 6HH—250 liters (86.0 gallons); 6HA2, 6HB2, 6HC, 6HD2, 6HG2—60 liters (15.9 gallons).

(5) Maximum net mass is as follows: 6HA1, 6HB1, 6HD1, 6HG1, 6HH—400 kg (881.8 pounds); 6HB2, 6HC, 6HD2, 6HG2—75 kg (165.4 pounds).

§ 178.523 Standards for composite packagings with inner glass, porcelain, or stoneware receptacles.

(a) The following are identification codes for composite packagings with inner receptacles of glass, porcelain, or stoneware:

(1) 6PA1 for glass, porcelain or stoneware receptacles within a protective steel drum;

(2) 6PA2 for glass, porcelain or stoneware receptacles within a protective steel crate or box;

(3) 6PB1 for glass, porcelain or stoneware receptacles within a protective aluminum drum;

(4) 6PB2 for glass, porcelain, or stoneware receptacles within a protective aluminum crate or box;

(5) 6PC for glass, porcelain, or stoneware receptacles within a protective wooden box;

(6) 6PD1 for glass, porcelain or stoneware receptacles within a protective plywood drum;

(7) 6PD2 for glass, porcelain, or stoneware receptacles within a protective wickerwork hamper;

(8) 6PG1 for glass, porcelain or stoneware receptacles within a protective fiber drum;

(9) 6PG2 for glass, porcelain, or stoneware receptacles within a protective fiberboard box;

(10) 6PH1 for glass, porcelain or stoneware receptacles within a protective expanded plastic packaging; and

(11) 6PH2 for glass, porcelain, or stoneware receptacles within a protective solid plastic packaging.

(b) Construction requirements for composite packagings with inner receptacles of glass, porcelain, or stoneware are as follows:

(1) Inner receptacles must conform to the following requirements:

(i) Receptacles must be of suitable form (cylindrical or pear-shaped), be made of good quality materials free from any defect that could impair their strength, and be firmly secured in the outer packaging.

(ii) Any part of a closure likely to come into contact with the contents of the receptacle must be resistant to those contents. Closures shall be fitted so as to be leakproof and secured to prevent any loosening during transportation. Vented closures must conform to § 173.24(f) of this subchapter.

(2) Protective packagings must conform to the following requirements:

(i) For receptacles with protective steel drum 6PA1, the drum must comply with § 178.504(b). However, the removable lid required for this type of packaging may be in the form of a cap.

(ii) For receptacles with protective packaging of steel crate or steel box 6PA2, the protective packaging must conform to the following:

(A) Section 178.512(b);

(B) In the case of cylindrical receptacles, the protective packaging shall, when upright, rise above the receptacle and its closure; and

(C) If the protective crate surrounds a pear-shaped receptacle and is of matching shape, the protective packaging shall be fitted with a protective cover (cap).

(iii) For receptacles with protective aluminum drum 6PB1, the requirements

of § 178.505(b) apply to the protective packaging.

(iv) For receptacles with protective aluminum box or crate 6PB2, the requirements of § 178.512(b) apply to the protective packaging.

(v) For receptacles with protective wooden box 6PC, the requirements of § 178.513(b) apply to the protective packaging.

(vi) For receptacles with protective plywood drum 6PD1, the requirements of § 178.507(b) apply to the protective packaging.

(vii) For receptacles with protective wickerwork hamper 6PD2, the wickerwork hamper shall be properly made with material of good quality. The hamper shall be fitted with a protective cover (cap) so as to prevent damage to the receptacle.

(viii) For receptacles with protective fiber drum 6PH1, the drum must conform to the requirements of § 178.508(b).

(ix) For receptacles with protective fiberboard box 6PH2, the requirements of § 178.516(b) apply to the protective packaging.

(x) For receptacles with protective solid plastic or expanded plastic packaging 6PH1 or 6PH2, the requirements of § 178.517(b) apply to the protective packaging. Solid protective plastic packaging shall be manufactured from high-density polyethylene or from some other comparable plastic material. The removable lid required for this type of packaging may be a cap.

(3) Quantity limitations are as follows:

(i) Maximum net capacity for packagings for liquids: 60 liters (15.9 gallons).

(ii) Maximum net mass for packagings for solids: 75 kilograms (165.4 pounds).

148. A new Subpart M would be added to read as follows:

Subpart M—Testing of Non-bulk Packagings and Packages

Sec.

178.600 Purpose and scope.

178.601 General requirements.

178.602 Preparation of packagings and packages for testing.

178.603 Drop test.

178.604 Leakproofness test.

178.605 Hydrostatic pressure test.

178.606 Stacking test.

178.607 Cooperage test for bung-type wooden barrels.

178.608 Chemical compatibility test for plastic receptacles.

Subpart M—Testing of Non-Bulk Packagings and Packages

§ 178.600 Purpose and scope.

This subpart prescribes certain testing requirements for performance-oriented

packagings identified in Subpart L of this part.

§ 178.601 General requirements.

(a) The test procedures prescribed in this subpart are intended to ensure that packages containing hazardous materials can withstand normal conditions of transportation and are considered minimum requirements. Each packaging shall be so manufactured and assembled as to be capable of successfully passing the prescribed tests and of conforming to the requirements of § 173.24 of this subchapter at all times while in transportation.

(b) It is the responsibility of the packaging manufacturer and the shipper, to the extent that assembly functions including final closure are performed by the latter, to assure that each package is capable of passing the prescribed tests.

(c) The packaging manufacturer shall achieve successful test results for each new or different packaging at the start of production of that packaging and at intervals established by the manufacturer of sufficient frequency to ensure that all packagings are capable of passing the prescribed tests. With the exception of the chemical compatibility test for plastic receptacles (§ 178.608 of this subchapter) production tests must be conducted at least once in each 12 month period. The chemical compatibility test must be conducted only at the start of production. For the purpose of this subpart, a different packaging is one that differs from a previously produced packaging in structural design, size, material of construction, wall thickness or manner of construction but does not include—

(1) A packaging which differs only in reduced design height (The cross-sectional shape and area must remain the same.);

(2) A packaging which differs only in surface treatment;

(3) A combination packaging which differs only in that the outer packaging has been successfully tested with different inner packagings (A variety of such different inner packagings may be assembled in this outer packaging without further testing); or

(4) A plastic packaging which differs only with regard to additives which

conform to § 178.509(b)(3) or § 178.517(b) (4) or (5).

(d) The manufacturer shall conduct the tests prescribed in this subpart using random samples of production packagings, in the numbers specified in the appropriate test section. In addition, the leakproofness test shall be performed on every new packaging by the manufacturer or reconditioned packaging by the shipper or reconditioner, to which it applies.

(e) The Director, OHMT, may approve the selective testing of packagings that differ only in minor respects from a tested type, including packagings containing a lesser number or smaller sizes of inner packagings or with inner packagings of lower net mass; and packings such as drums, bags, and boxes which are produced with small reductions in external dimension.

(f) Notwithstanding the retest intervals specified in paragraph (c) of this section, the Director, OHMT, may at any time require proof, through testing in accordance with this subpart, that packagings meet the requirements of this subpart. As required by the Director, OHMT, the manufacturer shall either—

(1) Conduct performance tests in accordance with this subpart; or

(2) Supply packagings, in quantities sufficient to conduct tests in accordance with this subpart, to the Director, OHMT, or a designated representative.

(g) If an inner treatment or coating of a packaging is required for safety reasons, the manufacturer shall design the packaging so that the treatment or coating retains its protective properties even after withstanding the tests prescribed by this subpart.

(h) The manufacturer shall keep records of test results for at least one year and make them available for inspection by a representative of the Department upon request.

§ 178.602 Preparation of packagings and packages for testing.

(a) Tests shall be carried out on packagings and packages as prepared for transportation, including inner receptacles in the case of combination packagings.

(b) For the drop and stacking test, inner and single-unit receptacles shall

be filled to not less than 95 percent of their capacity in the case of solids and not less than 98 percent in the case of liquids. The materials to be transported in the packagings may be replaced by non-hazardous materials, except for chemical compatibility testing or where this would invalidate the results of the tests.

(c) If the materials to be transported are replaced for test purposes by non-hazardous materials, the materials used must be of the same or higher specific gravity as the materials to be carried and their other physical properties (grain, size, viscosity) which might influence the results of the required tests must correspond as closely as possible to those of the hazardous materials to be transported.

(d) Paper or fiberboard packagings shall be conditioned for at least 24 hours in an atmosphere maintained—

(1) At 50 percent ± 2 percent relative humidity, and at a temperature of 23 °C ± 2 °C (73 °F ± 4 °F); or

(2) At 65 percent ± 2 percent relative humidity, and at a temperature of 20 °C ± 2 °C (68 °F ± 4 °F), or 27 °C ± 2 °C (80 °F ± 4 °F); or

(3) For testing at periodic intervals only (i.e., other than initial design qualification testing), at ambient conditions.

(e) Each packaging shall be closed in preparation for testing in the same manner as if prepared for actual shipment. All closures shall be installed using proper techniques and torques.

(f) Bung-type barrels made of natural wood shall be left filled with water for at least 24 hours before the tests.

(g) Except as provided in § 173.24(e)(3)(iii) of this subchapter, the chemical compatibility test provided in § 178.608 shall be performed on test samples used for the drop, stacking, hydrostatic pressure and leakproofness tests, before the conduct of the latter tests, at the start of production of each new or different packaging where plastic comes in contact with liquid hazardous material.

§ 178.603 Drop Test.

(a) The number of drops required and the packages' orientation are as follows:

Packaging	No. of test	Drop orientation samples
Steel drums, Aluminum drums, Metal drums (other than steel or aluminum), Steel jerricans, Plywood drums, Wooden barrels, Fibre drums, Plastics drums and jerricans, Composite packagings which are in the shape of a drum.	Six (three for each drop).....	First drop (using three samples): The package must strike the target diagonally on the chime or, if the packaging has no chime, on each drop) a circumferential seam or an edge. Second drop (using the other three samples): The package must strike the target on the weakest part not tested by the first drop, for example a closure or, for some cylindrical drums, the welded longitudinal seam of the drum body. First drop: Flat on the bottom (using the first sample). Second drop: Flat on the top (using the second sample). Third drop: Flat on the long side (using the third sample). Fourth drop: Flat on the short side (using the fourth sample). Fifth drop: On a corner (using the fifth sample).
Boxes of natural wood, Plywood boxes, Reconstituted wood boxes, Fiberboard boxes, Plastic boxes, Steel or aluminum boxes, Composite packagings which are in the shape of a box.	Five (one for each drop).....	

Packaging	No. of test	Drop orientation samples
Bags—single-ply with a side seam,	Three—(three drops per bag)	First drop: Flat on a wide face (using all three samples). Second drop: Flat on a narrow face (using all three samples). Third drop: On an end of the bag (using all three samples).
Bag—single-ply without a side seam, or multi-ply,	Three (two drops per bag)	First drop: Flat on a wide face (using all three samples). Second drop: On an end of the bag (using all three samples).

(b) Special preparation of test samples for the drop test. Testing of plastic drums, jerricans, and boxes, composite packagings with inner plastic receptacles, and of combination packagings with inner plastic receptacles, other than expanded plastic boxes and bags, shall be carried out when the temperature of the test sample and its contents has been reduced to -18°C (0°F) or lower. Test liquids shall be kept in the liquid state, if necessary, by the addition of anti-freeze.

(c) Target. The target must be a rigid, non-resilient, flat and horizontal surface.

(d) Drop height. Drop heights, measured as the vertical distance from the target to the lowest point on the package, are determined as follows:

(1) For solids and liquids, if the test is performed with the solid or liquid to be transported or with a non-hazardous material having essentially the same physical characteristic, the drop height is determined according to Packing Group, as follows:

(i) Packing Group I: 1.8 meters (5.91 feet).

(ii) Packing Group II: 1.2 meters (3.94 feet).

(iii) Packing Group III: 0.8 meters (2.62 feet).

(2) For liquids, if the test is performed with water—

(i) Where the materials to be carried have a specific gravity not exceeding 1.2, drop height is determined according to Packing Group, as follows:

(A) Packing Group I: 1.8 meters (5.91 feet).

(B) Packing Group II: 1.2 meters (3.94 feet).

(C) Packing Group III: 0.8 meters (2.62 feet).

(ii) Where the materials to be transported have a specific gravity exceeding 1.2, the drop height shall be calculated on the basis of the specific gravity (SG) of the material to be carried, rounded up to the first decimal, as follows:

(A) Packing Group I: SG X 1.5 meters (4.92 feet).

(B) Packing Group II: SG X 1.0 meter (3.28 feet).

(C) Packing Group III: SG X 0.67 meters (2.25 feet).

(e) Criteria for passing the test. A package is considered to successfully pass the drop tests if for each sample tested —

(1) For receptacles containing liquid, each receptacle does not leak when equilibrium has been reached between the internal and external pressures;

(2) For removable head drums for solids, the entire contents are retained by an inner packaging (e.g., a plastic bag) even if the closure on the top head of the drum is no longer sift-proof;

(3) For a bag, neither the outermost nor an outer packaging exhibits any damage likely to adversely affect safety during transport;

(4) For a composite or combination packaging, there is no damage to the outer packaging likely to adversely affect safety during transport, and there is no leakage of the filling substance from the inner packaging;

(5) For a drum, jerrican or bag, any discharge from a closure is slight and ceases immediately after impact with no further leakage; and

(6) For packagings for explosives, no rupture of the packaging occurs.

§ 178.604 Leakproofness test.

(a) General. The leakproofness test shall be performed with compressed air or other suitable gases on all packagings intended to contain liquids; however, this test is not required for inner packagings of combination packagings.

(b) Number of packagings to be tested—(1) Production testing. All packagings subject to the provisions of this section shall be tested and must pass the leakproofness test:

(i) Before they are first used in transportation; and

(ii) Prior to reuse, when authorized for reuse by § 173.28 of this subchapter.

(2) Design qualification testing. Three samples of each different packaging shall be tested and must pass the leakproofness test.

(c) Special preparation. (1) For design qualification testing, packagings must be tested with closures in place. For production testing, packagings need not have their closures in place.

(2) For testing with closures in place, vented closures shall either be replaced by similar non-vented closures or the vent shall be sealed.

(d) Test method. The packaging shall be restrained under water while an internal air pressure is applied; the method of restraint must not affect the results of the test. The test must be conducted for a period of time sufficient

to pressurize the interior of the packaging to the specified air pressure and to determine if there is leakage of air from the packaging. Other methods, at least equally effective, may be used, if approved by the Director, OHMT.

(e) Pressure applied. An internal air pressure (gauge) must be applied to the packaging as indicated for the following packing groups:

(1) Packing Group I: Not less than 30 kilopascals (4.4 psi).

(2) Packing Group II: Not less than 20 kilopascals (2.9 psi).

(3) Packing Group III: Not less than 20 kilopascals (2.9 psi).

(f) Criteria for passing the test. A packaging passes the test if there is no leakage of air from the packaging.

§ 178.605 Hydrostatic pressure test.

(a) Packagings to be tested. The hydrostatic pressure test shall be performed on samples of all metal, plastic, and composite packagings intended to contain liquids. This test is also required for inner packagings of combination packagings intended for transportation by aircraft.

(b) Number of test samples. Three test samples are required for each different packaging.

(c) Special preparation of receptacles for testings. Vented closures shall either be replaced by similar non-vented closures or the vent shall be sealed.

(d) Test method and pressure to be applied. Metal packagings and composite packagings other than plastic (e.g., glass, porcelain or stoneware), including their closures, shall be subjected to the test pressure for 5 minutes. Plastic packagings and composite packagings (plastic material), including their closures, shall be subjected to the test pressure for 30 minutes. This pressure is the one to be marked as required in § 178.503(a)(5). The receptacles shall be supported in a manner that does not invalidate the test. The test pressure shall be applied continuously and evenly and it shall be kept constant throughout the test period. The hydraulic pressure (gauge) applied, taken at the top of the receptacle, and determined by any one of the following methods shall be:

(1) Not less than the total gauge pressure measured in the packaging (i.e., the vapor pressure of the filling material)

and the partial pressure of the air or other inert gas minus 100 kilopascals (14.5 psi) at 55 °C (131 °F) and multiplied by a safety factor of 1.5. This total gauge pressure shall be determined on the basis of a maximum degree of filling in accordance with § 173.24a(b)(3) of this subchapter and a filling temperature of 15 °C (59 °F);

(2) Not less than 1.75 times the vapor pressure at 50 °C (122 °F) of the material to be transported minus 100 kilopascals (14.5 psi) but with a minimum test pressure of 100 kilopascals (14.5 psi); or

(3) Not less than 1.5 times the vapor pressure at 55 °C (131 °F) of the material to be transported minus 100 kilopascals (14.5 psi), but with a minimum test pressure of 100 kilopascals (14.5 psi).

Packagings intended to contain hazardous materials of Packing Group I shall be tested to a minimum test pressure of 250 kilopascals (36.3 psi).

(e) *Pressure test requirements for air transport.* Additional pressure test requirements for air transport, contained in § 173.27(c) of this subchapter, may exceed the pressure test required by paragraph (d) of this section.

(f) *Criteria for passing the test.* A package passes the hydrostatic test if, for each test sample, there is no leakage of liquid from the package.

§ 178.606 Stacking test.

(a) *General.* All packages other than bags shall be subjected to a stacking test.

(b) *Number of test samples.* Three test samples are required for each different packaging.

(c) *Test method.* The test sample shall be subjected to a force applied to the top surface of the test sample equivalent to the total weight of identical packages which might be stacked on it during transport. The minimum height of the stack, including the test sample, must be 3.0 meters (9.84 ft.). The duration of the test must be 24 hours, except that plastic drums, jerricans, and composite packaging 6HH, intended for liquids, shall be subjected to the stacking test for a period of 28 days at a temperature of not less than 40 °C (104 °F). Alternative test methods which yield equivalent results may be used if approved by the Director, OHMT.

(d) *Criteria for passing the test.* No test sample may leak. In composite packagings or combination packagings, there must be no leakage of the filling substance from the inner receptacle, or inner packaging. No test sample may show any deterioration which could adversely affect transport safety or any distortion likely to reduce its strength or cause instability in stacks of packages. Stacking stability is considered

sufficient when, after the stacking test, and, in the case of plastic receptacles after cooling to ambient temperature, two receptacles of the same type filled with water placed on each test sample maintain their positions for one hour.

§ 178.607 Cooperage test for bung-type wooden barrels.

(a) *Number of samples.* One barrel is required for each different packaging.

(b) *Method of testing.* Remove all hoops above the bilge of an empty barrel at least two days old.

(c) *Criteria for passing the test.* A packaging passes the cooperage test only if the diameter of the cross-section of the upper part of the barrel does not increase by more than 10 percent.

§ 178.608 Chemical compatibility test for plastic receptacles.

(a) This chemical compatibility test shall be performed on samples of all packagings where plastic comes in contact with liquid hazardous materials.

(b) Test samples required for conduct of the tests specified in §§ 178.603, 178.604, 178.605 and 178.606 must withstand without failure the procedure (excluding item 6) specified in Appendix B of Part 173 of this subchapter, entitled "Procedure for Testing Chemical Compatibility and Rate of Permeation in Polyethylene Packagings and Receptacles."

(c) The chemical compatibility test shall be performed using the specific hazardous material for which the packaging is intended;

(d) In addition to the test requirements of this section, all hazardous materials ladings packaged in plastic packagings and receptacles must conform to the compatibility requirements of § 173.24 of this subchapter.

PART 179—SPECIFICATIONS FOR TANK CARS

149. The authority citation for Part 179 would continue to read as follows:

Authority: 49 U.S.C. 1803, 1804, 1805, 1806, 1808; 49 CFR Part 1, unless otherwise noted.

150. Section 179.14 would be revised to read as follows:

§ 179.14 Coupler vertical restraint system.

(a) *Performance standard.* Each tank car shall be equipped with couplers capable of sustaining, without disengagement or material failure, vertical loads of at least 200,000 pounds (90,718.5 kg) applied in upward and downward directions in combination with buff loads of 2,000 pounds (907.2 kg), when coupled to cars equipped with couplers that do have this vertical restraint capability, and cars equipped

with couplers, that do not have this vertical restraint capability.

(b) Test verification and approval.

Except as provided in paragraph (d) of this section, compliance with the requirements of paragraph (a) of this section shall be achieved by verification testing of the coupler vertical restraint system in accordance with paragraph (c) of this section, and approval of the Federal Railroad Administrator.

(c) *Coupler vertical restraint tests.* A coupler vertical restraint system shall be tested under the following conditions:

(1) The test coupler shall be tested with a mating coupler (or simulated coupler) having only frictional vertical force resistance at the mating interface; or a mating coupler (or simulated coupler) having the capabilities described in paragraph (a) of this section.

(2) The testing apparatus shall simulate the vertical coupler performance at the mating interface and may not interfere with coupler failure or otherwise inhibit failure due to force applications and reactions.

(3) The test shall be conducted as follows:

(i) A minimum of 200,000 pounds (90,718.5 kg) vertical downward load shall be applied continuously for at least five minutes to the test coupler head simultaneously with the application of a nominal 2,000-pound (907.2 kg) buff load;

(ii) The procedures prescribed in paragraph (c)(3)(i) of this section shall be repeated with a minimum vertical upward load of 200,000 pounds (90,718.5 kg); and

(iii) A minimum of three consecutive successful tests shall be performed for each load combination prescribed in paragraphs (c)(3) (i) and (ii) of this section. A test is successful when a vertical disengagement or material failure does not occur during any of the prescribed load combinations.

(d) *Listing of approved couplers.* The following classes of couplers have been approved by the Federal Railroad Administrator and need not be verified by the testing requirements of paragraph (c) of this section:

(1) E top bottom shelf couplers designated by the Association of American Railroads' Catalog Nos. SE60CHT, SE60CHTE, SE67BHT, SE67BHTE, SE68BHT or SE68BHTE; and

(2) F top shelf couplers designated by the Association of American Railroads' Catalog Nos. SF70CHT, SF70CHTE, SF73AHT, SF73AHTE, SF79CHT or SF79CHTE.

§ 179.101-1 [Amended]

151. In § 179.101-1, the table of individual specification requirements would be amended as follows:

- a. The column for DOT Specification 112A400F is deleted.
- b. The "Insulation" requirement entry for 112A200W, 112A340W, 112A400W, 112A500W, 114A340W, and 114A400W is changed from "None" to "4. ¹³ Optional".
- c. Footnote 13 is added to read: "¹³ Tank cars equipped with insulation per § 179.100-4 of this subchapter may be stenciled "EQUIPPED WITH INSULATION PER 49 CFR 179.100-4".
- d. The DOT specification entry "112A400W ¹²" is revised to read "112A400W ^{11, 12}".

§ 179.102 [Amended]

152. In § 179.102, the following changes would be made:

- a. §§ 179.102-3, 179.102-5, 179.102-6, 179.102-7, 179.102-8, 179.102-9, 179.102-10, 179.102-11, 179.102-12, 179.102-13, 179.102-14, 179.102-16 and 179.102-20 are removed.
- b. In § 179.102-1, paragraphs (a)(2) through (a)(6) are removed.
- c. In § 179.102-2, paragraphs (a) (1), (2), and (3) are removed and paragraph (a)(4) is redesignated as (a)(1).
- d. In § 179.102-4, paragraphs (a) and (l) are removed and reserved.
- e. In § 179.102-17, in paragraph (a), "DOT-105A600W" is changed to "DOT-105J600W" and paragraph (m) is removed.

§ 179.105 [Amended]

153. The title to § 179.105 would be revised to read as follows:

§ 179.105 Special requirements for Specification 105S, 105J, 111J, 112S, 112J, 112T, 114S, 114J and 114T tank cars.

154. Section 179.105-1 would be revised to read as follows:

§ 179.105-1 General.

(a) In addition to the requirements of this section, each Specification 105S, 105J, 111J, 111J, 112S, 112J, 112T, 114S, 114J and 114T tank car must meet the applicable requirements of § 179.100, 179.101, 179.103, and 179.104.

(b) Notwithstanding the provisions of §§ 179.3, 179.4 and 179.5, AAR approval is not required for changes in or additions to tank cars necessary to comply with this section.

(c) Each Specification 105S, 105J, 111J, 112S, 112J, 112T, 114S, 114J, and 114T tank car shall be equipped with a tank head puncture resistance system that meets the requirements of § 179.105-5.

(d) Each Specification 105J, 111J, 112J, 112T, 114J, and 114T tank car shall be equipped with:

(1) A thermal protection system that meets the requirements of § 179.105-4; and

(2) A safety valve that meets the requirements of § 179.105-7.

§§ 179.105-2 and 179.105-3 [Reserved]

155. Sections 179.105-2 and 179.105-3 would be removed and reserved.

§ 179.105-4 [Amended]

156. In paragraph (a) of § 179.105-4, the phrase "Each specification 112T, 112J, 114T, and 114J tank car" would be changed to read "Each Specification 105J, 111J, 112J, 112T, 114J, and 114T tank car".

§ 179.105-6 [Reserved]

157. Section 179.105-8 would be removed and reserved. 158. In paragraph (a) of § 179.105-7, the phrase "each 112 and 114 tank car" would be changed to read "each Specification 105J, 111J, 112J, 112T, 114J, and 114T tank car" and paragraph (c) would be revised to read as follows:

§ 179.105-7 Safety relief valves.

(c) Notwithstanding the provisions of § 179.100-15, § 179.200-18 or paragraph (a) of this section, the relieving or discharge capacity of the safety relief valve on a tank car tank used to transport a Division 2.3 material may be calculated in accordance with the formula prescribed in Section A8.01 of Appendix A of the AAR Specifications for Tank Cars applicable to compressed gases in insulated tanks if—

(1) The tank is equipped with a thermal protection system in accordance with § 179.105-4;

(2) In all of three consecutive simulation pool fire tests required by paragraph (d) of § 179.105-4, none of the thermocouples on the uninsulated side of the steel plate indicates a plate temperature in excess of 550 °F; and

(3) For tanks used for ethylene oxide, the valve capacity is at least 1100 scfm (31.1 cubic meters per minute) at 85 psig (586.1 kPa).

* * * * *

159. In § 179.105-8, paragraphs (d) and (e) would be added to read as follows:

§ 179.105-8 Stenciling.

(d) Each Specification 105 tank car that is equipped as prescribed in § 179.105-1(c) shall be stenciled with the letter "S" substituted for the letter "A" in the specification marking.

(e) Each Specification 105 tank car that is equipped as prescribed in § 179.105-1(d) shall be stenciled with the letter "J" substituted for the letter "A" in the specification marking.

§§ 179.106 through 179.106-4 [Removed and Reserved]

160. Sections 179.106 through 179.106-4 would be removed.

§§ 179.202 through 179.202-22 [Removed and Reserved]

161. Sections 179.202 through 179.202-22 would be removed and reserved.

§ 179.203 [Amended]

162. In § 179.203, paragraphs (c) and (d) would be removed from § 179.203-1 and paragraph (a)(1) would be removed from § 179.203-2.

§ 179.302 [Removed and Reserved]

163. Section 179.302 would be removed and reserved.

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Alan I. Roberts,

Director, Office of Hazardous Materials Transportation.

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