

- 2136 Tetralin hydroperoxide, *technical pure*. See Organic peroxide, solid, n.o.s.
- 2160 1,1,3,3-Tetramethylbutyl hydroperoxide, *technical pure*. See Organic peroxide, liquid or solution, n.o.s.
- 2161 1,1,3,3-Tetramethyl butylperoxy-2-ethyl hexanoate, *technical pure*. See Organic peroxide, liquid or solution, n.o.s. (49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1, and paragraph (a)(4) of App. A to Part 106).

Note.—The Materials Transportation Bureau has determined that the proposals in the notice, if implemented, would not result in a major economic impact under the terms of Executive Order 12044 and DOT implementing procedures (43 FR 9583) nor an environmental impact statement under the National Environmental Policy Act (49 U.S.C. 4321 et seq.). A regulatory evaluation is available in the public docket.

Issued in Washington, D.C. on July 13, 1979.

Alan I. Roberts,
Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.
(FR Doc. 79-22370 Filed 7-25-79; 6:45 am)

BILLING CODE 4910-60-M

[49 CFR Parts 172 and 173]

[Docket No. HM-159; Notice No. 79-12]

Forbidden Materials

AGENCY: Materials Transportation Bureau (MTB), Research and Special Programs administration, DOT.

ACTION: Notice of Proposed Rulemaking.

SUMMARY: This notice proposes to add the names of materials to the Hazardous Materials Table (49 CFR 172.101) that the MTB considers to be too hazardous to be permitted in commercial transportation. The proposed addition of materials to the Table has been modified in this notice based on comments received on the Advance Notice of Proposed Rulemaking published in the Federal Register on February 23, 1978 (43 FR 7449). Also, it is proposed that N-methyl-N'-nitro-N-nitrosoguanidine be listed in the Table as a flammable solid and a new § 173.179 be added prescribing the packaging requirements for this material. In addition, the MTB is proposing certain changes to §§ 173.21 and 173.51 pertaining to forbidden materials and packaging.

DATE: Comments must be received on or before October 18, 1979.

ADDRESS COMMENTS TO: Dockets Branch, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590.

FOR FURTHER INFORMATION CONTACT: Charles W. Schultz, Technical Division,

Office of Hazardous Materials, Regulation, 2100 Second Street, S.W., Washington, D.C. 20590, phone 202-755-4906.

SUPPLEMENTARY INFORMATION: On February 23, 1978, the MTB published an Advance Notice of Proposed Rulemaking (43 FR 7449) concerning materials which are believed to be too hazardous to be permitted in commercial transportation. The Advance Notice included four lists of materials and requested that the public comment on the following three questions:

1. Should the Hazardous Materials Table be the consolidated central location for the listing of forbidden materials by chemical name or should that listing be placed in a separate section?

2. What, if any, additional materials should be identified in the regulations as forbidden?

3. Are there any materials listed in this notice which do not meet the regulatory criteria making them a forbidden material? If so, identify these materials and explain why they should not be considered forbidden materials.

A total of fifty-three comments were received and evaluated. Only one commenter was opposed to having a list of forbidden materials. The reasons for this opposition were that no list could be complete, the absence of a specific chemical from the list would imply that it is not forbidden, and there is no need for a list because the regulations provide criteria for prohibiting certain materials from being transported. The MTB disagrees and believes that all known materials considered to be too hazardous for transportation should be included in a list. This has been done previously, however, the list has not been as extensive as the list presently proposed.

All other commenters were in favor of incorporating forbidden materials in Title 49, Code of Federal Regulations (49 CFR). Thirteen commenters stated that these materials should only be placed alphabetically in only 49 CFR 172.101 based on the fact that there should only be a single source list for all hazardous materials. Four commenters suggested that a separate list be provided in some other section of the regulations. This was based on the belief that a separate section would be easier to use and would more easily identify these materials. Five commenters stated that the forbidden materials should be put in both 49 CFR 172.101 and another section. The basis for this position is that the commenters felt that all

materials should be included in the Table in § 172.101 but that the list of forbidden materials also be included in a separate section so that persons could more easily determine which materials are forbidden without a complete review of the Table in § 172.101. The MTB believes that placing the names of forbidden materials only in § 172.101 is better than the other two alternatives because: (1) A person using the regulations should start at the Hazardous Materials Table and if it is noted that a material is forbidden he does not have to look any further; (2) A person using the regulations could possibly overlook the forbidden materials if they were in a separate section; and (3) Placing the materials in both § 172.101 and another section results in unnecessary duplication of regulations, causes confusion, and does not contribute appreciably to safety.

Two commenters were concerned that if a material was shown as forbidden this would mean that solutions of that material or devices containing that material would also be forbidden. This is not the intent of the MTB and this is made clear in the proposed change to § 172.100.

Two commenters stated that certain triazoles have properties which would indicate they are forbidden but other triazole compounds do not have such properties. Pending further detailed investigation into these chemicals, triazoles are being removed from the proposed list. The same situation exists with triazines which were also deleted from the proposal.

One commenter submitted reports from the Bureau of Explosives (B of E) which classed the material, Bis 2-fluoro-2,2-dinitro ethylformal, (FEFO), as a Class A explosive. The MTB is in agreement with the report and, therefore, this material has been deleted from this proposed list as a forbidden material.

One commenter suggested that the material, nitroisobutanetriol trinitrate, be added to the list and another commenter stated that the material, t-butoxy-carbonylazide, should be added. Based on the information submitted on each of these materials, they have been added as forbidden materials. Two commenters recommended that the concentration of ketone peroxides be expressed in terms of active oxygen, rather than percentage of peroxide, and that the active oxygen content of these materials be limited to 9 percent. The MTB agrees with the data submitted and has incorporated such changes in this notice.

Twenty-five commenters opposed forbidding the transportation of N-methyl-N'-nitrosoguanidine because it is a very important reagent in cancer and mutagenic research. The MTB does not believe that the product should be shipped under § 173.85(d) which provides essentially no regulation. A proposal has been made for shipping limited amounts of this chemical in packagings recommended by the B of E. The MTB is proposing to class this material as a flammable solid when packaged in accordance with B of E recommended packagings.

In the Advance Notice it was proposed to list by name the forbidden explosives now appearing in § 173.51. The MTB has reconsidered this proposal and is now proposing to include two new entries in § 172.101 which are referenced to 173.51. These are "Forbidden Explosives" and "Explosives, forbidden." In this proposal, 173.51 has been rewritten to make it clearer and concise. The major proposed changes in this section include: the inclusion of most of the fireworks with explosives because fireworks are classed as explosives; the revision of the present entry "fireworks containing copper sulfate and a chlorate" to include any acidic metal salt and a chlorate due to the fact that the hazard of spontaneous combustion is not limited only to copper sulfate and a chlorate; and the inclusion of devices in an effort to be consistant with other sections of 49 CFR governing explosives which also include devices.

"Forbidden materials," with a reference to § 173.21, is a proposed new entry which did not appear in the Advanced Notice. Section 173.21 would be amended for clarification. This section applies to any material considered to be forbidden and is not limited to materials falling within established hazard classes. Included in the proposed revision of this section is a prohibition against the offering of packages that evolve a dangerous quantity of flammable gas or vapor released from a material not otherwise subject to the regulations, e.g. the release of flammable blowing agent vapors from a manufactured product in such quantities that an explosive mixture would be created within the transport vehicle. It is also proposed that each refrigeration method, when used as a means of stabilization, be approved by the Associate Director for Operations and Enforcement. This change is in accord with the approval withdrawals presently being handled by amendments published under Docket HM-163.

This proposed rulemaking, which would prohibit the transportation of certain materials known to be susceptible to accidental detonation in a fire (other than an explosive), is responsive to Recommendation No. 3 in the National Transportation Safety Board's report (No. NTSB-RAR-78-1) on the explosion which occurred in Wenatchee, Washington on August 6, 1974.

The principal drafters of this document are Charles W. Schultz and Delmer E. Billings, Office of Hazardous Materials Regulation, and George W. Tenley, Jr., Office of the Chief Counsel, Research and Special Programs Administration.

In consideration of the foregoing, it is proposed to amend Parts 172 and 173 of Title 49, Code of Federal Regulations, as follows:

PART 172—HAZARDOUS MATERIALS TABLE AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

1. In § 172.100 paragraph (d) would be revised to read as follows:

§ 172.100 Purpose and use of the table.

(d) Column 3 contains a designation of the hazard class corresponding to each proper shipping name or the word "Forbidden." A material for which the class entry is "Forbidden" may not be offered or accepted for transportation. The prohibition against the transport of chemicals and mixtures thereof applies to commercial or research grade material. This prohibition does not apply to these materials when diluted, stabilized or incorporated in devices, if they are classed in accordance with the definitions of hazardous materials contained in Part 173 of this subchapter. When re-evaluation of test data or new test data indicates a need to modify the hazard class or labels specified for a material specifically identified in § 172.101, these data should be reported to the Associate Director, Office of Hazardous Materials Regulation.

2. Section 172.101 would be amended by adding the following entries in alphabetical order in column 2, followed by the word "FORBIDDEN" in column 3. All entries would be in italics to indicate that they are not proper shipping names. Also, following the proposed list of forbidden materials is an entry "N-Methyl-N'-nitro-N-nitrosoguanidine" which is to be added in bold type in alphabetical order with the described information in the appropriate columns:

§ 172.101 Hazardous materials table. [Amended]

Acetyl acetone peroxide with an available oxygen content exceeding 9 percent by weight.

Acetyl benzoyl peroxide, solid, or in solution exceeding 40 percent by weight.

Acetyl cyclohexane sulfonyl peroxide wetted with less than 12 percent water by weight or a solution exceeding 32 percent by weight.

Acetylene (liquid).

Acetylene silver nitrate.

Acetyl peroxide, solid, or in solution exceeding 25 percent by weight.

Aluminum or magnesium dross, wet or hot.

Ammonium azide.

Ammonium bromate.

Ammonium fulminate.

Ammonium nitrite.

Antimony sulfide and a chlorate, mixtures of.

Arsenic sulfide and a chlorate, mixtures of.

Ascaridole (organic peroxide).

Azaurolic acid (salt of), (dry).

Azidodithiocarbonic acid.

Azidoethyl nitrate.

Azido guanidine picrate (dry).

5-Azido-1-hydroxy tetrazole.

Azido hydroxy tetrazole (mercury and silver salts).

3-Azido-1,2-Propylene glycol dinitrate.

Azotetrazole (dry).

Benzoxadiazoles (dry).

Benzene diazonium chloride (dry).

Benzene diazonium nitrate (dry).

Benzene triozonide.

Benzoyl azide.

Biphenyl triozonide.

*2,2-Bis(*t*-Butylperoxy) butane exceeding 55 percent by weight in solution.*

2,2-Bis(4,4-dimethyl butylperoxy cyclohexyl) propane exceeding 42 percent by weight with inert solid.

Bis(1-hydroxytetrazole) (dry).

Bromine azide.

4-Bromo-1,2-dinitrobenzene (unstable at 55°C).

1-Bromo-2-mitrobenzene (unstable at 55°C).

Bromosilane.

1, 2, 4-Butane triol trinitrate.

t-Butoxy carbonyl azide.

t-Butyl diphenylphthalate exceeding 55 percent by weight in solution.

n-Butyl peroxymalcarbonate exceeding 52 percent by weight in solution.

t-Butyl hydroperoxide exceeding 90 percent by weight in water.

t-Butyl peracetate exceeding 78 percent by weight solution.

t-Butyl perisobutyrate exceeding 77 percent by weight in solution.

Cabazide.

Chlorine azide.

Chlorine dioxide (not hydrate).

Coal briquettes, hot.

Copper acetylide.

Copper amine azide.

Copper tetramine nitrate.

Cyanuric triazide.

Cyclotetramethylene tetranitramine (dry) (HMX).

Diacetone alcohol peroxide with an available oxygen content exceeding 9 percent by weight.

Diazodinitrophenol (dry).

p-Diazidobenzene.	Hexanitroazoxy benzene.
1,2-Diazidoethane.	2,4,6,2',4',6' Hexanitro-3,3'-dihydroxyazo-benzene (dry).
1,3 Diazopropane.	2,4,6,2',3',4',6 Hexanitrodiphenylamine.
1,1' Diazoaminonaphthalene.	2,4,6,3',4',6' -Hexanitrodiphenylether.
Diazoaminotetraazole (dry).	N,N' (hexanitrodiphenyl) ethylene dinitramine, (dry).
Diazodiphenylmethane.	Hexanitrodiphenyl urea.
Diazonium nitrates (dry).	Hexanitroethane.
Diazonium perchlorates (dry).	Hexanitrooxanilide.
Dibenzyl peroxidicarbonate exceeding 87 percent by weight in water.	Hydrazine azide.
Dibromoacetylene.	Hydrazine chlorate.
Dichloroacetylene.	Hydrazine dicarbonic acid diazide.
N,N'-Dichlorazodicarbonamidine (salts of), (dry).	Hydrazine perchlorate.
2,4-Dichlorobenzoyl peroxide wet with water exceeding 75 percent by weight of peroxide.	Hydrazine selenate.
2,6-Dichloro-4-nitrophenol.	Hydroxyl amine iodide.
Diclophenylidene peroxide.	Hyponitrous acid.
Diethanol nitrosamine dinitrate (dry).	Iodoso and iodoxy compounds (dry).
Diethylgold bromide.	Initiating explosives (dry).
Diethyl peroxydicarbonate exceeding 27 percent by weight in solution.	Inositol hexanitrate (dry).
1,8-Dihydroxy-2,4,5,7-tetrinitroanthraquinone (chrysannmine acid).	Inulin trinitrate (dry).
Diidoacetylene.	Iodine azide (dry).
Diisopropyl benzene hydroperoxide exceeding 75 percent by weight in solution.	Iridium nitratopentamine iridium nitrate.
2,5-Dimethyl-2,5-dihydroperoxy hexane exceeding 82 percent by weight in water.	Iso thiacyanic acid (polymerization hazard).
Di(1-naphthoyl) peroxide.	Lead azide (dry).
Dinitro-7,8-dimethylglycouril, (dry).	Lead mononitroresorsinate (dry).
1,3-Dinitro-5,5-dimethyl hydantoin.	Lead picrate (dry).
1,3-Dinitro-4,5-dinitrosobenzene.	Lead styphnate (dry).
1,1-Dinitroethane (dry).	Mannitan tetranitrate.
1,2-Dinitroetane.	Mercurous azide.
Dinitroglycoluril.	Mercury acetylidyde.
Dinitromethane.	Mercury iodide aquabasic ammonobasic (Iodide of Millon's base).
Dinitropropylene glycol.	Mercury nitride.
2,4-Dinitroresorcinol (heavy metal salts of), (dry).	Mercury oxycyanide.
4,6-Dinitroresorcinol (heavy metal salts of), (dry).	Metal salts of methyl nitramine (dry).
3,5-Dinitrosalicylic acid (lead salt) (dry).	Methazotic acid.
2,2-Dinutrostilbene.	Methylamine dinitramine and dry salts thereof.
2,4-Dinitro-1,3,5-trimethylbenzene.	Methylamine nitroform.
Dinitrosobenzylamidine and salts of, (dry).	Methylamine perchlorate, (dry).
1,4-Dinitro-1,4,4-tetramethylbutylbenzene.	Methylene glycol dinitrate.
Di(beta-nitroxyethyl) ammonium nitrate.	Methylethyl ketone peroxide with an available oxygen content exceeding 9 percent by weight.
a,d'-Di(nitroxy) methylether.	a-Methylglucoside tetranitrate.
1,9-Dinitroxy pentamethylene-2,4,6,8-tetramine, (dry).	a-Methylglycerol trinitrate.
Ethanol amine dinitrate.	Methyl isobutyl ketone peroxide with an available oxygen content exceeding 9 percent by weight.
Ethylene diamine diperchlorate.	Methyl nitrate.
Ethylene glycol dinitrate.	Methyl picric acid, (heavy, metal salts of).
Ethyl hydroperoxide (explodes above 100° C.)	Methyl trimethylol methane trinitrate.
Ethyl perchlorate.	Monochloroacetone (unstabilized).
Explosive forbidden, see § 173.51.	Naphthalene dizonide.
Forbidden Explosives, see § 173.51.	Naphthyl amine perchlorate.
Forbidden Materials, see § 173.21.	Nickel picrate.
Fulminating gold.	Nitrated paper-(unstable).
Fulminating mercury.	Nitrites of diazonium compounds.
Fulminating platinum.	N-Nitroaniline.
Fulminating silver.	m-Nitrobenzene diazonium perchlorate.
Fulminate of mercury (dry).	6-Nitro-4-diazotoluene-3-sulfonic acid, (dry).
Fulminic acid.	Nitroethylene polymer.
Galaotsan trinitrate.	Nitroethyl nitrate.
Glycerol-1,3-dinitrate.	Nitrogen triiodide.
Glycerol monogluconate trinitrate.	Nitrogen triiodide monoamine.
Glycerol monolactate trinitrate.	Nitroguanidine nitrate.
Guanyl nitrosamino guyanylidene hydrazine (dry).	1-Nitro Hydantoin.
Hexamethylene triperoxide diamine (dry).	Nitro isobutane triol trinitrate.
Hexamethylol benzene hexanitrate.	Nitromannite, (dry).
	N-Nitro-N-methylglycolamide nitrate.
	2-Nitro-2-methylpropanol nitrate.
	m-Nitrophenyldinitro methane.
	Nitrosugars, (dry).
	1,7-Octadiene-3,5-diyne-1,8-dimethoxy-9-octoadecenoic acid.
	Pentanitroaniline, (dry).
	Peracetic acid in excess of 40 percent concentration by weight.
	Pentaerythrite tetrinitrate (dry).
	m-Phenylenediaminediperchlorate (dry).
	Phosphorous (white or red) and a chlorate, mixtures of.
	Potassium carbonyl.
	Propionyl peroxide exceeding 28 percent by weight in solution.
	Pyridine perchlorate.
	Quenachitol pentanitrate.
	Selenium nitride.
	Shaped charges (commercial) containing more than 8 ounces of explosives.
	Silver acetylide (dry).
	Silver azide (dry).
	Silver chlorite (dry).
	Silver fulminate (dry).
	Silver oxalate (dry).
	Silver picrate (dry).
	Sodium picryl peroxide.
	Sodium tetra nitrate.
	Sucrose octanitrate (dry).
	Sulfur and chlorate, loose mixtures of.
	Tetra azido benzene quinone.
	Tetra ethylammonium perchlorate (dry).
	Tetra methylene diperoxide dicarbamide.
	Tetra nitro diglycerin.
	2,3,4,8-Tetra nitrophenol.
	2,3,4,6-Tetranitrophenyl methyl nitramine.
	2,3,4,8-Tetra nitrophenylnitramine.
	Tetra nitro resorcinol (dry).
	2,3,5,6-Tetra nitroso nitrobenzene (dry).
	2,3,5,6-Tetra nitroso-1,4-dinitrobenzene.
	Tetrazine (dry).
	Tetrazolyl azide (dry).
	Trichloro methyl perchlorate.
	Triformoxime trinitrate.
	Trimethylene glycoldiperchlorate.
	Trimethylol nitro methane trinitrate.
	1,3,5-Trimethyl-2,4,8-trinitrobenzene.
	Trinitro acetic acid.
	Trinitroacetonitrile.
	Trinitro amine cobalt.
	2,4,6-Trinitro-1,3-diazobenzene.
	Trinitroethanol.
	Trinitroethyl nitrate.
	Trinitromethane.
	2,4,6-Trinitroso-3-methyl nitraminoanisol.
	1,3,5-Trinitronaphthalene.
	2,4,6-Trinitrophenyl guanidine (dry).
	2,4,6-Trinitrophenyl nitramine.
	2,4,6-Trinitrophenyl trimethylol methyl nitramine trinitrate (dry).
	2,4,6-Trinitro-1,3,5-triazido benzene, (dry).
	Tri(beta-nitroxyethyl) ammonium-nitrate.
	Trinitrotetramine cobalt nitrate.
	Tris, bis-bifluoroamino diethoxy propane (TVOPA).
	Vinyl nitrate polymer.
	p-Xylyl diazide.

For the material N-Methyl-N'-nitro-N-nitrosoguanidine, the following entries would be added to the Table: in Column 1, no entry; in Column 2, N-Methyl-N'-nitro-N-nitrosoguanidine (not exceeding 25 grams in one outside packaging); in Column 3, Flammable solid; in Column 4, Flammable solid; in Column 5(a), none; in Column 5(b), 173.179; in Column 6(a) Forbidden; in Column 6(b),

Forbidden; in Column 7(a), 4; in Column 7(b), 5; and in Column 7(c); no entry.

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGING

3. Section 173.21 would be revised to read as follows:

§ 173.21 Forbidden materials and packages.

(a) Unless otherwise provided in this subchapter, the offering for transportation of the following is forbidden:

(1) A hazardous material in the same packaging, freight container, or overpack with another hazardous material, the mixing of which would be liable to cause a dangerous evolution of heat or gas, or produce corrosive materials, except as provided in §§ 173.152(a) and 173.242(a) and (b).

(2) A package containing a material which is liable 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 dangerous evolutions. Refrigeration may be used as a means of stabilization only when approved by the Associate Director for OE.

(3) Packages which evolve a dangerous quantity of flammable gas or vapor released from a material not otherwise subject to this subchapter.

(4) Packages containing materials (other than those classed as explosives) which will detonate in a fire.

(5) Any package containing a cigarette lighter or other similar device with fuel and equipped with an ignition element, unless the design of the device and its packaging insofar as they affect safety in transportation have been examined and approved by MTB. (An approval which was issued by the B of E remains valid to the same extent as if it had been issued by MTB.) For lighters containing gases, also see § 173.303.

4. Section 173.51 would be revised to read as follows:

§ 173.51 Forbidden explosives.

(a) Unless otherwise provided in this subchapter, the transportation of the following explosives is forbidden:

(1) Explosive compounds, mixtures or devices which ignite spontaneously or undergo marked decomposition when subjected to a temperature of 167° F. (75° C.) for 48 consecutive hours.

(2) New explosive compounds, mixtures or devices, except as provided for in § 173.66.

(3) Explosive mixtures or devices containing an ammonium salt and a chlorate.

(4) Explosive mixtures or devices containing an acidic metal salt and a chlorate.

(5) Leaking or damaged packages of explosives.

(6) Nitroglycerin, diethylene glycol dinitrate or other liquid explosives not authorized by § 173.53 (e) or (h). (For shipment by motor vehicle other than by common carriers, see § 177.622(b) of this subchapter.)

(7) Loaded firearms.

(8) Fireworks that combine an explosive and a detonator or blasting cap.

(9) Fireworks containing yellow or white phosphorous.

(10) Toy torpedoes, the maximum outside dimension of which exceeds ¾ inch, or toy torpedoes containing a mixture of potassium chloride, black antimony, and sulfur with an average weight of explosive composition in each torpedo exceeding four grains.

5. A new § 173.179 would be added to read as follows:

§ 173.179 N-Methyl-N'-nitro-N-nitrosoguanidine.

N-Methyl-N'-nitro-N-nitrosoguanidine must be packaged as follows: Quantities may not exceed 25 grams and must be placed in a polyethylene bottle which is tightly closed and the closure secured in place with pressure sensitive tape. The bottle must be sealed in a polyethylene bag constructed of polyethylene at least 4 mils thick. The bag containing the bottle must be cushioned in a hermetically sealed can with non-combustible cushioning material. There must be at least one inch of cushioning material between any part of the bag and any inner surface of the can. The metal can must be cushioned in a DOT 12B fiberboard box constructed of at least 350 pound test fiberboard. There must be at least one inch of cushioning material between any surface of the can and any inner surface of the fiberboard box.

Authority: 49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1, and paragraph (a)(4) of App. A, Part 106.

Note.—The Materials Transportation Bureau has determined that this document does not contain a major proposal requiring the preparation of an economic impact statement under Executive Order 12814 and DOT implementing procedures (43 FR 9582), nor an environmental impact statement under the National Environmental Policy Act (49 U.S.C. 4321 et seq.). A regulatory evaluation is available for review in the Docket.

Issued in Washington, D.C., on July 13, 1979.

Alan I. Roberts,

Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.

[FR Doc. 79-22371 Filed 7-25-79; 8:45 am]

BILLING CODE 4910-59-31

[49 CFR Parts 171, 172, and 176]

[Docket No. HM-174; Notice No. 79-11]

Use of United Nations Shipping Descriptions

AGENCY: Materials Transportation Bureau, Research and Special Programs Administration, DOT

ACTION: Notice of proposed rulemaking.

SUMMARY: This notice proposes to amend the Hazardous Materials Regulations to authorize the optional use of United Nations shipping descriptions and identification numbers for certain hazardous materials in place of the descriptions required by existing Department of Transportation (DOT) regulations. This proposal is intended to facilitate the international transportation of hazardous materials and to minimize the economic burdens imposed on shippers by the multiplicity of package markings and shipping paper descriptions now required to comply with both the domestic and international standards. In addition, the proposal would provide optional stowage locations for hazardous materials when transported by vessel. The optional stowage locations authorized are those provided for the particular hazardous material in the International Maritime Dangerous Goods (IMDG) Code published by the Inter-Governmental Maritime Consultative Organization (IMCO).

DATE: Comments by October 18, 1979.

ADDRESS COMMENTS TO: Dockets Branch, Materials Transportation Bureau, Department of Transportation, Washington, D.C. 20590. Comments may be reviewed in the Dockets Branch, Room 6500, Trans Point Building, between 8:30 a.m. and 5:00 p.m., Monday through Friday.

FOR FURTHER INFORMATION CONTACT: LCDR Edward A. Altemer, USCG, International Standards Coordinator, Office of Hazardous Materials Regulation, Materials Transportation Bureau, 2100 Second Street SW., Washington, D.C., 20590, 202-426-0656.

SUPPLEMENTARY INFORMATION: In recent years increasing worldwide recognition has been accorded the IMCO IMDG Code as the basic standard governing

the international transport of packaged hazardous materials by sea. At this time at least twenty-eight nations have incorporated the IMCO Code in whole or in part into their national hazardous materials regulations. Included in this number is the vast majority of the industrialized nations, nations with which the United States conducts a vigorous trade in packaged hazardous materials.

One serious problem confronting the United States exporter or importer of hazardous materials is the disparity between shipping descriptions which may be required for the same hazardous material under the DOT's Hazardous Materials Regulations and the IMCO Code. Since the DOT regulations do not currently provide for the use of IMCO shipping descriptions, when the IMCO and DOT shipping descriptions for a particular hazardous material differ, the shipper finds it necessary to mark both shipping names on the package and to include both shipping names on the shipping papers. This duplicity of effort is necessary in order to insure that the shipment can move under DOT regulations to a port, will be accepted for transportation by vessel, and finally will be deemed suitable for discharge and subsequent transport in foreign countries. The Materials Transportation Bureau (MTB) believes that, in general, the costs incurred by the shipper in dual marking of packages and dual description of hazardous materials on shipping papers are disproportionate to any possible safety benefit which may be achieved by this practice. Also, such a practice creates confusion during the transportation of these materials.

With the publication of the revised and consolidated DOT Hazardous Materials Regulations under Docket HM-103/112, a provision was included in the regulations that allowed hazardous materials (except Class A and B explosives and radioactive materials) being imported to or exported from, or transiting the United States, classified and labeled in accordance with the IMCO Code to be transported by any mode of transport within the United States. This provision was included to alleviate difficulties arising from the different classification and labeling requirements that may be provided for the same hazardous material under the IMCO Code and DOT regulations. The purpose of this notice is, in essence, to extend this authorization to include use of the IMCO shipping description as well as the IMCO classification and label. In addition, this notice would expand the applicability of this authorization to

domestic as well as international shipments. This action is taken in recognition of the fact that when hazardous materials packages are initially marked and labeled during production, the shipper may have no idea as to whether his hazardous material will be sold domestically or will be exported. To maintain a distinction between the shipping description requirements based upon ultimate destination of the hazardous material would lead to either remarking and relabeling packages prior to exporting them, or to initially marking both DOT and IMCO shipping names on the package when it is filled. Neither of these alternatives is considered to be a significant improvement over the practice mandated by the present situation.

On January 17, 1978, the National Transportation Safety Board (NTSB) issued Safety Recommendation I-78-1, in which the NTSB recommended that the Secretary of Transportation:

Develop, publish and maintain an official list of regulated hazardous materials that cross-references all U.S., UN, IMCO, and IATA commodity descriptions and reference numbers. The list should be arranged for convenient use by all persons engaged in the export or import of hazardous materials. (Class II, Priority Action I-78-1)

As a supporting argument for this recommendation, the NTSB made reference to the aircraft crash at Boston, Massachusetts, in 1973. While the MTB is not convinced that the existence of such a list would have in any way mitigated the catastrophic results of the Boston incident, the MTB strongly supports the principle underlying this recommendation; that is, that hazardous materials shipping descriptions used in all modes of international transport should be made readily available in a form convenient for use. MTB believes that this goal can be achieved by including these international shipping descriptions in the DOT Hazardous Materials Regulations. Implementation of NTSB Safety Recommendation I-78-1 is, therefore, an ancillary purpose for this notice.

In its recommendation, the NTSB makes reference to UN (United Nations), IMCO and IATA (International Air Transport Association) commodity descriptions. Since the shipping names used in the IMCO Code are, for the most part, extracted from the recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods, publication of the IMCO shipping descriptions will include the vast majority of the entries in the United Nations recommendations. In

addition, since the IMCO recommendations are operative modal recommendations which have been implemented by many governments whereas the UN recommendations are not, it is considered more appropriate for the time being to publish only the descriptions used in the operative international recommendations.

Regarding the NTSB's suggested use of IATA descriptions, the MTB is of the opinion that most of the IATA descriptions are the same as those listed in § 172.101. Also, the International Civil Aviation Organization (ICAO) is currently developing regulations for the international transport of hazardous materials by air. Inclusion of ICAO descriptions in the optional list (upon promulgation of the ICAO regulations) is considered an appropriate action since ICAO is the recognized intergovernmental organization charged with the responsibility for developing safety standards for international air transport. Therefore, it is envisioned that the list of shipping descriptions proposed in this notice will eventually be expanded to incorporate ICAO descriptions as appropriate. It should be noted, however, that, as with IMCO, the ICAO descriptions are based upon descriptions recommended by the UN Committee of Experts. For this reason, it is anticipated that the vast majority of the IMCO descriptions contained in this notice will ultimately be authorized descriptions under the ICAO regulations. The similarity between the descriptions authorized by IMCO and ICAO is not coincidental, but rather is a result of an intensive effort under way at these organizations to harmonize international requirements for the transportation of hazardous materials by sea and air through recognition of the recommendations developed by the UN Committee of Experts.

The descriptions proposed in this notice are those appearing in the IMCO Code (as modified by Amendments 14-78 and 15-77) that describe hazardous materials which would generally not be classified as Class A or B explosives or radioactive materials under the DOT regulations. Entries in the IMCO Code which clearly apply only to hazardous materials which would be classified as Class A or B explosive or radioactive materials have not been included in this notice since authorization to use the appropriate IMCO classification and labels for such materials is not authorized by the DOT regulations at this time.

The drafter of this document is LCDR Edward A. Altemos, USCG, Office of Hazardous Materials Regulation. The

following is an analysis and explanation, by section, of the more significant features of this proposal.

Section 171.2. Two minor amendments are proposed to this section to include a reference to § 176.11 which was inadvertently omitted from the revision of this paragraph published under Docket HM-103/112.

Section 171.12. Paragraph (b) of this section is no longer considered necessary since the provisions of this paragraph are contained in the proposed § 172.102(b). Therefore, it is proposed that this paragraph be replaced by an appropriate cross reference to § 172.102.

Section 172.102. A new § 172.102 would be added. This section would contain the Optional Hazardous Materials Table as well as the text necessary to explain the table and implement its use.

Paragraph (a) of this section sets forth the basic purpose of the Optional Hazardous Materials Table which is to provide hazardous materials description, classification, labeling and vessel stowage requirements which may be used for certain hazardous materials as an alternative to the corresponding requirements provided in § 172.101. However, materials subject to the DOT regulations that are not considered dangerous under IMCO recommendations would have to be transported in accordance with the applicable DOT regulations. This exclusion has been included to insure that it is clearly understood that materials such as a combustible liquid with a flash point greater than 141° F. (in packagings of a capacity exceeding 110 gallons), which would not be considered dangerous according to IMCO definitions, would be subject to all applicable DOT requirements. A statement is also included in this paragraph to clarify the fact that many of the materials shown in the Optional Hazardous Materials Table are not subject to the DOT regulations and that their inclusion in the optional list does not constitute a designation of the material as a hazardous material. Only materials designated as hazardous materials in § 172.101 or covered by the prohibition specified in §§ 173.21 and 173.51 would be subject to the DOT regulations.

Entries for materials not designated as hazardous in § 172.101 would be retained in the optional list to alert persons who may be engaged in importing or exporting such materials that the materials may be considered hazardous under widely applied international standards and to provide basic guidance relative to the

classification and labeling of these materials in international transport.

Paragraph (b) of § 172.102 proposes conditions under which the description, class or label(s) provided in the Optional Hazardous Materials Table could be used in lieu of the DOT description, classification or label(s), respectively. Class A and B explosives and Radioactive materials would be excluded from application of the provisions of § 172.102. Therefore, in order for a shipper to determine if he may use the Optional Hazardous Materials Table he would first establish the classification of the hazardous material under consideration in accordance with all applicable requirements of the DOT regulations. This is particularly important in the case of explosives where the classification *may not* necessarily be established solely by the shipper. Once the shipper has classified the hazardous material as provided in the DOT regulations, has determined that the material is not a Class A or B explosive or a Radioactive material, and is not a forbidden material, he could then proceed to use the Optional Hazardous Materials Table if he so desired.

The conditions in the existing § 171.12(b) under which the IMCO class and label(s) may be used when a hazardous material is transported by air, highway or rail have been retained in § 172.102(b), with the exception of the condition previously discussed that limited the application of the paragraph to import, export or transiting shipments. It is proposed that the IMCO shipping name may only be used when the material conforms to all additional defining or limiting conditions prescribed for the description in the appropriate schedule in the IMCO Code. Individual IMCO Code schedules often contain criteria or additional information which limit the applicability of a particular description, and the MTB believes that these additional provisions should be observed in selecting an IMCO shipping description from § 172.102. The use of IMCO shipping name is also made conditional upon inclusion of the UN number shown for the entry (if any) in the Optional Hazardous Materials Table immediately after the required class entry in the shipping papers. This would be required not only to insure consistency with the United Nations standards for transport documentation, but also to enhance emergency response capabilities. Additional information concerning the use of the UN number for emergency response purposes is provided in the preamble to the Docket HM-126A

Notice of Proposed Rulemaking which was published on June 7, 1979 (44 FR 32972).

Paragraph (c) of § 172.102 would require that the description for a material designated as a hazardous substance in § 172.101 be augmented by the technical name of the substance if that name does not appear in the optional shipping description. This is to insure that hazardous substances do not lose their basic identity when a shipper chooses to utilize a shipping description from the Optional Hazardous Materials Table in place of the name that would be otherwise required by § 172.101.

Paragraphs (d) through (j) explain the content of columns 1 through 7 respectively of the Optional Hazardous Materials Table. Column 1 contains the letter "N" adjacent to certain entries. This indicates that the particular shipping description, class and label(s) shown in § 172.102 are not acceptable alternatives to the applicable DOT requirements in § 172.101 and, therefore, may not be used. This prohibition would be imposed only when the MTB believes the IMCO description and/or classification appearing in § 172.102 will not adequately communicate the hazard(s) of the material in all modes of transport.

Column 2 of the Optional Hazardous Materials Table lists the proper shipping names contained in the IMCO Code. The basic format of entries and methods of selection and presentation of proper shipping names on shipping documents and packages are identical to those in § 172.101. As previously discussed, entries that are contained in the IMCO Code which describe materials that could only be classified as Class A or B explosives or Radioactive materials under DOT regulations have been omitted from the list. Also omitted from the Optional Hazardous Materials Table are a limited number of entries from the IMCO Code which:

(1) Are not included in the UN recommendations and to which no UN number has been assigned;

(2) Are not "N.O.S." entries that would require addition of the technical name of the hazardous material; and,

(3) In the opinion of the MTB, are not sufficiently explicit to permit appropriate response measures to be initiated in the event of an incident.

Examples of such entries are the IMCO shipping names "Acaricides" and "Nematocides." Hazardous materials falling within such descriptions will, therefore, be transported under the next most appropriate description in § 172.102 (such as Poisonous liquid,

n.o.s., in the case of the above examples), or under the appropriate description in § 172.101.

Column 3 of the Optional Hazardous Materials Table sets forth the IMCO hazard class or division of the material as appropriate. Paragraph (f) of § 172.102 includes a brief definition of each of the IMCO hazard classes and divisions and refers the user to the IMCO Code for more detailed definitions.

Column 4 of the table indicates the United Nations number assigned to the material, if any. In certain cases where no UN number has been assigned to a particular material, the MTB has inserted in Column 4 the UN number of the appropriate generic, or "n.o.s." entry under which the material would be included. In such cases, the UN number listed has been shown in parentheses.

Column 5 specifies the labels to be applied to the hazardous material. Specifications for the labels may be either as provided in the DOT regulations or in the IMCO Code. The label described as "St. Andrew's Cross" in this column refers to the label specified for Division 6.1, Packaging Group III materials in the UN and IMCO recommendations.

Column 6, which is for informational purposes only, provides the packaging group assigned to the material in the IMCO Code. An explanation of the meaning and purpose of this grouping system, as well as the grouping criteria developed for certain hazard classes, is presented in the recommendations prepared by the United Nations Committee of Experts on the Transport of Dangerous Goods. These recommendations, entitled "Transport of Dangerous Goods," may be obtained from the United Nations bookstores in New York or Geneva, Switzerland. The MTB believes that a number of individuals involved in the international transportation of hazardous materials have gained sufficient working knowledge of the grouping system to merit the inclusion of packaging groups in the Optional Hazardous Materials Table.

Column 7 sets forth the vessel stowage requirements for the hazardous materials as provided in the IMCO Code. Although § 172.101 was revised with the publication of Docket HM-103/112 to include IMCO stowage requirements to the maximum extent possible, the differences between shipping descriptions for certain hazardous materials in the DOT regulations and the IMCO Code made it impossible to include the IMCO stowage requirements for all hazardous

materials. The MTB believes that consistency between the DOT and IMCO stowage requirements is necessary to insure that vessels loaded in United States ports will not be in violation of the stowage requirements in force in those nations who have adopted the IMCO Code into their national regulations, and vice versa. Inclusion of the majority of the IMCO shipping descriptions in the Optional Hazardous Materials Table would make it possible to authorize the use of IMCO stowage when hazardous materials are transported under an appropriate IMCO description. The meanings of numbers used to designate acceptable stowage locations are explained in the proposed § 172.102(j). The numbers used in § 172.102 retain the same meaning assigned to them in § 172.101; however, the explanations of the meanings of these numbers have been revised in an effort to provide greater clarity.

Section 172.201. Paragraph (a)(4)(i) of this section would be amended to allow the optional insertion of the entries "IMCO" or "IMCO Class" in the hazardous materials description on the shipping papers. The MTB believes that certain shippers may desire to include these entries to clarify the fact that a hazardous material is being offered under its IMCO classification, particularly when this classification differs from that provided for the material in § 172.101.

Section 176.11. A new paragraph (f) would be added to permit hazardous materials classed, labeled and described in accordance with the Optional Hazardous Materials Table to be stowed as provided in that Table. The purpose of this authorization is explained elsewhere in this notice.

In consideration of the foregoing, it is proposed to amend Parts 171, 172 and 176 of Title 49, Code of Federal Regulations as follows:

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

1. § 171.2 paragraphs (a) and (b) would be amended by adding "in § 176.11 of this subchapter and" immediately preceding "§ 171.12" in the first line of each paragraph.

2. § 171.12 paragraph (b) would be revised to read as follows:

§ 171.12 Import and export shipments.

(b) Provisions under which certain hazardous materials may be transported when classified, labeled and described

in accordance with the IMCO Code are set forth in § 172.102 of this subchapter.

PART 172—HAZARDOUS MATERIALS TABLES AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

3. The title of Part 172 would be amended by replacing the word "TABLE" with the word "TABLES."

4. The title of Subpart B would be amended by replacing the word "TABLE" with the word "Tables."

5. A new § 172.102 would be added to read as follows:

§ 172.102 Purpose and use of the optional hazardous materials table.

(a) The Optional Hazardous Materials Table set forth in this section provides description, classification, labeling and vessel stowage requirements which may be used as an alternative to the corresponding requirements in § 172.101 under conditions set forth in this section. The provisions of this section do not apply to materials designated as hazardous materials under this subchapter that are not subject to the requirements of the IMCO Code. This section does not designate materials as hazardous materials. Such designations are made only in § 172.101. A number of materials listed in this section may not be subject to the requirements of this subchapter, but they are subject to regulation under widely applied international standards and are listed in this section in the interest of providing consistency with those standards and to alert persons offering or accepting these materials for transportation that they may be subject to regulation in international transport.

(b) The requirements of § 172.101 notwithstanding, a hazardous material (other than Class A or B explosives and Radioactive materials) may be classed, labeled or described in accordance with this section provided the material conforms to all additional defining or limiting conditions prescribed for the description in the appropriate schedule of the IMCO Code. When a material is transported by air, highway or rail under the description and IMCO class or division provided in this section, the shipping paper required by § 172.202(a)(2) must include a class name set forth in this subchapter that most appropriately corresponds to the IMCO class or division. In addition, the UN number specified for the material in this section must be included immediately after the required class entry. For example, according to this section the shipping description and

IMCO division for ethylene oxide are "Ethylene oxide 2.1." While ethylene oxide would be classed as a flammable liquid under § 172.101, the class in this subchapter that most closely corresponds to the IMCO class is "flammable gas." The proper entry would be "Ethylene oxide, Flammable gas, UN1040" or "Ethylene Oxide, 2.1, Flammable gas, UN1040."

(c) If a hazardous material that is designated as a hazardous substance in § 172.101, is offered, accepted or transported under an acceptable shipping name from the Optional Hazardous Materials Table that does not contain the technical name of the designated hazardous substance, the proper shipping name must include the technical name of the hazardous substance in parentheses immediately following the selected entry.

(d) Column 1 contains the letter "N" immediately adjacent to certain entries. This letter "N" means that the entry is not an acceptable alternative and the material must be transported under the appropriate entry in § 172.101.

(e) Column 2 lists the optional proper shipping names for hazardous materials. Proper shipping names are limited to those shown in Roman type (not italics). In the selection of a proper shipping name to describe a particular material, if the correct technical name is not shown, or is not appropriate, selection must be made from the general descriptions or "n.o.s." entries corresponding to the specific hazard class of the material being shipped. The name that most appropriately describes the material must be used, i.e., an alcohol must be shipped as an alcohol n.o.s. rather than flammable liquid n.o.s. unless the technical name of the alcohol is listed, e.g., methanol. Some mixtures may be more aptly described by their application such as "Paint" or "Cleaning compound."

(1) Shipping names may be entered in either upper or lower case letters.

(2) The 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) When one entry references another entry by use of a "see", if both names are in Roman type, either name may be used as a proper shipping name (e.g., Methyl alcohol see Methanol). (f) Column 3 contains the hazard class or division designated for the material in the IMCO Code. In the case of explosives, a letter designating the "compatibility group" of the substance

or article is also included immediately following the division. Detailed definitions of the classes, divisions and compatibility groups are provided in the IMCO Code. Basic definitions of the IMCO classes and divisions are as follows:

(1) Class 1—Explosives.

(i) Division 1.1—Substances and articles which have a mass explosion hazard.

(ii) Division 1.2—Substances and articles which have a projection hazard but not a mass explosion hazard.

(iii) Division 1.3—Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

(iv) Division 1.4—Substances and articles which present no significant hazard.

(v) Division 1.5—Very insensitive substances.

(2) Class 2—Gases (compressed, liquefied or dissolved under pressure).

(i) Division 2.1—Flammable gases.

(ii) Division 2.2—Nonflammable gases.

(iii) Division 2.3—Poison gases.

(3) Class 3—Flammable liquids.

(i) Division 3.1—Low flash point group (liquids with flash points below 0°F.)

(ii) Division 3.2—Intermediate flash point group (liquids with flash points of 0°F. or above but less than 73°F.).

(iii) Division 3.3—High flash point group (liquids with flash points of 73°F. or above but less than 141°F.).

(4) Class 4—Flammable solids or substances.

(i) Division 4.1—Flammable solids.

(ii) Division 4.2—Substances liable to spontaneous combustion.

(iii) Division 4.3—Substances emitting flammable gases when wet.

(5) Class 5—Oxidizing substances.

(i) Division 5.1—Oxidizing substances or agents.

(ii) Division 5.2—Organic peroxides.

(6) Class 6—Poisonous and infectious substances.

(i) Division 6.1—Poisonous substances.

(ii) Division 6.2—Infectious substances.

(7) Class 7—Radioactive substances.

(8) Class 8—Corrosives.

(9) Class 9—Miscellaneous dangerous substances.

(g) Column 4 contains the United Nations number listed for the substance or article in the IMCO Code. A number of substances or articles have no United Nations number provided for them in the IMCO Code. For some of these entries, the United Nations number of the article or substance which most appropriately

corresponds to that particular entry is shown in parentheses.

(h) Column 5 specifies the labels to be applied to each outside packaging. Specifications for labels required shall be either as provided in this subchapter or as provided in the IMCO Code.

(i) Column 6 provides the packaging group specified for the material in the IMCO Code.

(j) Column 7 specifies each of the authorized stowage locations on board cargo vessels and passenger vessels and certain additional requirements for shipments of listed hazardous materials. Section 176.63 of this subchapter sets forth the physical requirements for each of the authorized stowage locations listed in Column 7. The authorized stowage locations are defined as follows:

[1] "1" means the material must 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 either "on deck" or "under deck"; however, "under deck" stowage should be used if available.

[5] "1.3" means the material may be stowed either "on deck" or "under deck away from heat"; however, "under deck away from heat" stowage should be used if it is available.

[6] "5" means the material is forbidden and may not be offered or accepted for transportation by vessel.

Optional Hazardous Materials Table.
BILLING CODE 4910-06-M.

172.102 Optional Hazardous Materials Table

1

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	Acetal	3.1	UN 1088	Flammable Liquid	II	1,3	5	Keep cool
	Acetaldehyde	3.1	UN 1089	Flammable Liquid	I	1,3	5	Keep cool
	Acetic acid, solution containing not less than 80% of acid	3.3	UN 1842	Flammable Liquid, Corrosive	II	1,2	1,2	
	Acetic anhydride	8	UN 1715	Corrosive	II	1,2	1,2	Separate longitudinally by an intervening complete compartment or hold from explosives
	Acetone	3.1	UN 1090	Flammable Liquid	II	1,3	5	
	Acetone cyanohydrin, stabilized	6.1	UN 1541	Poison	I	1	5	Shade from radiant heat. Stow 'away from' acids and alkalies
	Acetone oils	3.2	UN 1091	Flammable Liquid	II	1,2	1	
	Acetonitrile. See Methyl cyanide							
	Acetyl acetone peroxide, maximum concentration 40% in solution	5.2	UN 2030	Organic Peroxide	II	1	5	
	Acetyl benzoyl peroxide, maximum concentration 45% in solution	5.2	UN 2051	Organic Peroxide	II	1	5	
	Acetyl bromide	8	UN 1716	Corrosive	I	1	1	
	Acetyl chloride	8	UN 1717	Corrosive, Flammable Liquid	I	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Acetyl cyclohexane sulphonyl peroxide, maximum concentration 62%, wetted with minimum 12% water	5.2	UN 2052	Organic Peroxide	I	1	5	Keep dry. Shade from radiant heat. Stow separated longitudinally by an intervening complete compartment or hold from explosives
	Acetyl cyclohexane sulphonyl peroxide, maximum concentration 62% in solution	5.2	UN 2053	Organic Peroxide	II	1	5	Maximum transport temperature -10 degrees C
	Acetyl iodide	8	UN 1894	Corrosive	II	1	1	Maximum transport temperature -10 degrees C
	Acetyl peroxide, maximum concentration 27% in solution	5.2	UN 1084	Organic Peroxide	II	1	5	Keep dry. Glass carboys prohibited on passenger vessels
	Acetylene, dissolved	2.1	UN 1001	Flammable Gas	-	1	1	Shade from radiant heat. Stow 'separate from' chlorine
	Acetylene tetrabromide	6.1	UN 2504	St. Andrews Cross	III	1,2	1,2	
	Acid butyl phosphate	8	UN 1718	Corrosive	III	1,2	1,2	Glass carboys in hampers prohibited under deck
	Acid mixtures, hydrofluoric and sulphuric	8	UN 1786	Corrosive	I	1	5	Stow 'away from' fluorides
	Acid mixtures, nitrating acid	8	UN 1796	Corrosive	I/II	1	5	Stow 'away from' fluorides
	Acid mixtures, spent	8	UN 1826	Corrosive	I/II	1	5	Stow 'away from' fluorides
	Acids, liquid, n.o.s. See Corrosive liquids, n.o.s.							
	Acrolein, inhibited	3.1	UN 1092	Flammable Liquid, Poison	I	1,3	5	Keep cool
	Acrylamide	6.1	UN 2074	St. Andrews Cross	III	1	1	
	Acrylic acid, inhibited	8	UN 2218	Corrosive	II	1	1	Shade from radiant heat. Keep cool. Glass carboys prohibited on passenger vessels
	Acrylonitrile, Inhibited	3.1	UN 1093	Flammable Liquid, Poison	I	1,2	5	Keep cool
	Activated carbon. See Carbon, activated							
	Activated charcoal. See Carbon, activated.							
	Adhesives, n.o.s. See Cement, adhesive, containing a flammable liquid							
	Adiponitrile	6.1	UN 2205	St. Andrews Cross	III	1,2	1,2	Shade from radiant heat
N	Aerosol dispensers, with a capacity of 1400 cubic cm. or more	2	UN 1950					
	Aerosol dispensers, with a capacity below 1400 cubic cm.:							
	(1) more than 10% by weight of total contents consisting of flammable gas	2.1	UN 1950	Flammable Gas	-	1,3	1,3	
	(2) internal pressure greater than 160 psig at 130 deg F.	2.2	UN 1950	Nonflammable Gas	-	1,3	1,3	
	(3) more than 45% by weight of total contents consisting of flammable liquid. This limit is reduced to 35% if there is any flammable gas present.	3.1	UN 1950	Flammable Liquid	-	1,3	1,3	
	(3.2)	3.2	UN 1950	Flammable Liquid	-	1,3	1,3	
	(3.3)	3.3	UN 1950	Flammable Liquid	-	1,3	1,3	
	(4) more than 10% by weight of toxic substances in the liquid concentrate	6.1	UN 1950	Poison	I/II	1,3	1,3	
	(5) more than 5% by weight of corrosive substances in the liquid concentrate	8	UN 1950	St. Andrews Cross	III	1,3	1,3	
	(6) as specified under Group 2 on page 901J of IMCO Code	9	UN 1950	Corrosive	-	1,3	1,3	
	Aerosols or aerosol product. See Aerosol dispensers							
	Agents, blasting, Type B. See Explosives, blasting, Type B							
	Agents, blasting, Type E. See Explosives, blasting, Type E							
	Air, compressed	2.2	UN 1002	Nonflammable Gas	-	1,2	1,2	
	Air, liquid	2.2	UN 1003	Nonflammable Gas, Oxidizer	-	1,3	1,3	Slow 'separate from' acetylene. Do not over-stow
	Alarm devices, explosive	1.4 S	UN 0001	None. Package to be marked 'L4 S'	-	1,3	1,3	
	Alcohol, denatured	3.2	UN 1095	Flammable Liquid	II	1,2	1	
	Alcohol, Industrial	3.3	UN 1095	Flammable Liquid	II	1,2	1,2	
	Alcohols, (non-toxic), n.o.s.	3.2	UN 1096	Flammable Liquid	II	1,2	1	
	Alcohols, (toxic), n.o.s.	3.3	UN 1096	Flammable Liquid	II	1,2	1,2	
		3.2	UN 1987	Flammable Liquid	II	1,2	1	
		3.3	UN 1987	Flammable Liquid, Poison	II	1,2	1	
		3.2	UN 1986	Flammable Liquid, Poison	II	1,2	1	
		3.3	UN 1986	Flammable Liquid, Poison	II	1,2	1	

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172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	(3) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	Aldehydes, (non-toxic), n.o.s.	3.2	UN 1989	Flammable Liquid	II	1,2	1	
		3.3	UN 1989	Flammable Liquid	II	1,2	1,2	
	Aldehydes, (toxic), n.o.s.	3.2	UN 1988	Flammable Liquid, Poison	II	1,2	1	
		3.3	UN 1988	Flammable Liquid, Poison	II	1,2	1,2	
	Aldrin and its mixtures	6.1	UN 1542	Poison	II/III	1,2	1,2	
	Alkaline earth metal amalgams, n.o.s.	4.3	UN 1389	Dangerous When Wet	I	1,2	1,2	
	Alkaline metal amides, n.o.s.	4.3	UN 1390	Dangerous When Wet	II	1,2	5	
	Alkaline metal dispersions, n.o.s.	4.3	UN 1391	Dangerous When Wet	I	1,2	5	
	Alkali metals, liquid alloys of	4.3	UN 1421	Dangerous When Wet	I	1,2	5	
	Alkaline caustic liquids, n.o.s. See Caustic alkali liquids, n.o.s.							
	Alkaline corrosive liquids, n.o.s. See Corrosive liquids, n.o.s.							
	Alkaline earth metal amalgams, n.o.s.	4.3	UN 1382	Dangerous When Wet	I	1,2	1,2	
	Alkaloids, (poisonous), and their salts, n.o.s.	6.1	UN 1544	Poison	I/II	1,2	1,2	
		6.1	UN 1544	St Andrews Cross	III	1,2	1,2	
	Alkanesulphonic acid	8	UN 1899	Corrosive	II	1,2	1	
	Alloys of alkaline earth metals, (non-pyrophoric), n.o.s.	4.3	UN 1393	Dangerous When Wet	II	1,2	5	
	Allyl alcohol	3.2	UN 1098	Flammable Liquid, Poison	I	1,2	1	
	Allyl bromide	3.2	UN 1099	Flammable Liquid	I	1,2	1	
	Allyl chloride	3.1	UN 1100	Flammable Liquid, Poison	I	1,2	5	Keep cool
	Allyl chlorocarbonate. See Allyl chloroformate							
	Allyl chloroformate	8	UN 1722	Corrosive	I	1	5	Keep dry. Slow 'separated longitudinally' by an intervening complete compartment or hold from explosives
	Allyl iodide	8	UN 1723	Corrosive	I	1	5	Keep dry
	Allyl isothiocyanate, stabilized	6.1	UN 1545	Poison	II	1	5	Shade from radiant heat
	Allyl trichlorosilane, stabilized	8	UN 1724	Corrosive	II	1	1	Keep dry. Slow 'separated longitudinally' by an intervening complete compartment or hold from explosives
	Aluminum alkyl halides, in solution	4.2	UN 2220	Spontaneously Combustible	II	1	1	
	Aluminum alkyl halides, pure	4.2	UN 2221	Spontaneously Combustible	I	1	1	
	Aluminum alkyl chlorides	4.2	UN 2003	Spontaneously Combustible	I	1	1	
	Aluminum alkyls	4.2	UN 2003	Spontaneously Combustible	I	1	1	
	Aluminum bromide, (anhydrous or solutions)	8	UN 1725	Corrosive	II	1,2	1,2	Keep dry
	Aluminum carbide	4.3	UN 1394	Dangerous When Wet	II	1,2	1,2	Keep dry
	Aluminum chloride, (anhydrous or solutions)	8	UN 1726	Corrosive	II	1,2	1,2	Keep dry
	Aluminum ferrosilicon, powder	4.3	UN 1395	Dangerous When Wet	II	1,2	1,2	
	Aluminum hydride	4.2	UN 2463	Spontaneously Combustible	I	1,2	5	
	Aluminum nitrate	5.1	UN 1438	Oxidizer	III	1,2	1,2	
	Aluminum phosphide	6.1	UN 1397	Poison, Dangerous When Wet	I	1,2	1,2	Stow 'away from' acids and oxidizing sub- stances
	Aluminum, powder, coated	4.1	UN 1309	Flammable Solid	III	1,2	1,2	Keep dry. Stow 'away from' nonflammable gases and poisons
	Aluminum, powder, pyrophoric. See Pyrophoric metals							
	Aluminum, powder, uncoated, non-pyrophoric	4.3	UN 1396	Dangerous When Wet	II	1,2	1,2	Keep dry. Stow 'away from' nonflammable gases and poisons
	Aluminum silicon, powder, uncoated	4.3	UN 1398	Dangerous When Wet	III	1,2	1,2	
	Aluminum tributyl	4.2	UN 2003	Spontaneously Combustible	I	1	1	
	Aluminum triethyl	4.2	UN 1402	Spontaneously Combustible	I	1	1	
	Aluminum trimethyl	4.2	UN 1103	Spontaneously Combustible	I	1	1	
	Aminophenols (o-, m-, p-)							
	Ammonia, anhydrous, liquefied, and ammonia solutions below S.G. 0.88 at 15 degrees C. ammonia liquid and ammonia solutions in water containing over 50% of ammonia.	6.1	UN 2512	St. Andrews Cross	III	1,2	1,2	Stow 'separate from' chlorine
		2.3	UN 1005	Poison Gas	--	1,2	5	
	Ammonia, solutions below S.G. 0.88 at 15 degrees C. containing more than 35% and not above 50% ammonia.	2.2	UN 2073	Nonflammable Gas	--	1,2	5	Stow 'separate from' chlorine
	Ammonia solutions having a density (specific gravity) between 0.880 and 0.917 at 15 deg C. in water, containing more than 10% and not more than 35% by weight ammonia.	8	UN 2672	Corrosive	III	1,2	1,2	Stow 'away from' living quarters
	Ammonium arsenate	6.1	UN 1546	Poison	II	1,2	1,2	Stow 'away from' alkalis
	Ammonium bifluoride. See Ammonium hydrogen fluoride							
	Ammonium dichromate	5.1	UN 1439	Oxidizer	II	1,2	1,2	Stow 'away from' foodstuffs
	Ammonium dinitro-o-cresolate	9	UN 1843	None	II	1,2	1,2	Stow 'away from' heavy metals, 'separated from' flammable substances and 'separated by' an intervening complete compartment or hold from explosives
	Ammonium fluoride	6.1	UN 2505	St. Andrews Cross	III	1,2	1,2	Stow 'away from' acids
	Ammonium hydrogen fluoride	8	UN 1727	Corrosive	II	1,2	1,2	Keep dry
	Ammonium metavanadate	6.1	UN 2859	Poison	II	1,2	1,2	

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	Ammonium nitrate, containing more than 0.2% by weight of combustible substances, including any organic substance calculated as carbon to the exclusion of any other added substance	1.1 D	UN 0222	Explosive (1.1D)	III	1,2	1,2	
	Ammonium nitrate, containing not more than 0.2% of combustible material (including organic material calculated as carbon) and free from any other added substance	3.1	UN 1942	Oxidizer	III	1,2	1,2	
	Ammonium nitrate fertilizers, of the same composition defined in class 3.1 on pages 5015 and 5016 of the IMCO Code but containing greater amounts of organic and/or combustible material than specified in these entries	3.1	UN 2072	Oxidizer	III	1,2	1,2	
	Ammonium nitrate fertilizers, containing ammonium nitrate, n.o.s.	1.1 D	UN 0223	Explosive (1.1D)	III	1,2	1,2	
	Ammonium nitrate fertilizers, Type A	5.1	UN 2067	Oxidizer	III	1,2	1,2	
	(1) Uniform non-segregating mixtures of ammonium nitrate with added matter which is inorganic and chemically inert towards ammonium nitrate, containing not less than 90% of ammonium nitrate and not more than 0.2% of combustible material (including organic material calculated as carbon), or containing less than 90% but more than 70% of ammonium nitrate and not more than 0.4% of total combustible material	5.1	UN 2068	Oxidizer	III	1,2	1,2	
	(2) Uniform non-segregating mixtures of ammonium nitrate with calcium carbonate and/or dolomite, containing more than 80% but less than 90% of ammonium nitrate and not more than 0.4% of total combustible material	5.1	UN 2069	Oxidizer	III	1,2	1,2	
	(3) Uniform non-segregating mixtures of ammonium nitrate/ammonium sulphate, containing more than 45% but not more than 70% of ammonium nitrate and containing not more than 0.4% of total combustible material	5.1	UN 2070	Oxidizer	III	1,2	1,2	
	(4) Uniform non-segregating mixtures of nitrogen/phosphate or nitrogen/potash types or complete fertilizers of nitrogen/phosphate/potash type, containing more than 70% of ammonium nitrate and not more than 0.4% of total combustible material	5.1	UN 2071	None	III	1,2	1,2	
	Ammonium nitrate fertilizers, Type B, Uniform non-segregating mixtures of nitrogen/phosphate or nitrogen/potash types or complete fertilizers of nitrogen/phosphate/potash type, containing not more than 70% of ammonium nitrate and not more than 0.4% of total added combustible material or containing not more than 45% of ammonium nitrate with unrestricted combustible material	9	UN 1442	Oxidizer	II	1,2	5	Stow 'away from' powdered metals
	Ammonium persulphate	5.1	UN 1444	Oxidizer	III	1,2	1,2	
	Ammonium picrate, wetted with not less than 10% water	4.1	UN 1310	Flammable Solid	I	1	5	Stow 'away from' heavy metals
	Ammonium picrate, wetted with not less than 33½ % of water	4.1	UN 1310	Flammable Solid	I	1,2	5	Stow 'away from' heavy metals
	Ammonium polyvanadate	6.1	UN 2861	Poison	II	1,2	1,2	
	Ammunition, illuminating, with or without burster, expelling charge or propelling charge	1.4 G	UN 0297	Explosive (1.4G)	—	1,3	1,3	
	Ammunition, incendiary (other than water-activated ammunition), without white phosphorus or phosphides, with or without burster, expelling charge or propelling charge	1.4 G	UN 0300	Explosive (1.4G)	—	1,3	1,3	
	Ammunition, practice	1.4 G	UN 0362	Explosive (1.4G)	—	1,3	1,3	
	Ammunition, proof	1.4 G	UN 0363	Explosive (1.4G)	—	1,3	1,3	
	Ammunition, (tear producing), non-explosive, with neither burster nor expelling charge, non-fuzed	6.1	UN 2017	Poison	II	1,2	5	Keep dry
	Ammunition, tear-producing, with burster, expelling charge or propelling charge	1.4 G	UN 0301	Explosive (1.4G), Poison, Corrosive	—	1,3	1,3	
	Ammunition, (toxic), non-explosive, with neither burster nor expelling charge, non-fuzed	6.1	UN 2016	Poison	II	1,2	5	Keep dry
	Amorces	1.4 S	UN 0222	None. Package to be marked '1.4 S'	—	1,3	1,3	
	Amyl acetates	3.2	UN 1104	Flammable Liquid	II	1,2	1	
	Amyl alcohols	3.2	UN 1104	Flammable Liquid	II	1,2	1,2	
	Amyl chloride	3.2	UN 1105	Flammable Liquid	II	1,2	1	
	Amyl formates	3.2	UN 1105	Flammable Liquid	II	1,2	1,2	
	Amyl hydroxide. See Pentane	3.2	UN 1107	Flammable Liquid	II	1,2	1	
	Amyl mercaptan	3.2	UN 1111	Flammable Liquid	II	1,2	1	
	Amyl methyl ketone	3.2	UN 1110	Flammable Liquid	III	1,2	1,2	
	Amyl nitrate	3.3	UN 1112	Flammable Liquid	II	1,2	1,2	
	Amyl nitrite	3.1	UN 1113	Flammable Liquid	II	1,2	5	Keep cool
	Amyl trichlorosilane	8	UN 1728	Corrosive	II	1	1	Keep dry. Stow 'separated by an intervening complete compartment or held from' explosives
	Anylamine	3.2	UN 1106	Flammable Liquid	II	1,2	1	
	n-Amylene	3.1	UN 1108	Flammable Liquid	I	1,2	5	
	Aniline	6.1	UN 1547	Poison	II	1,2	1,2	Stow 'away from' acids and oxidizers
	Aniline hydrochloride	6.1	UN 1548	St. Andrews Cross	III	1,2	1,2	Stow 'away from' alkalis
	Aniline oil. See Aniline	6.1	UN 2431	St. Andrews Cross	III	1,2	1,2	
	o-Anisidine	6.1	UN 1729	Corrosive	II	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Anisoyl chloride	8	UN 1729	Corrosive	II	1	1	
	Anti-freeze. See Flammable Liquid preparations, n.o.s.							
	Antimony chloride. See Antimony trichloride, liquid or solid							

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	Antimony compounds, (inorganic), n.o.s.	6.1	UN 1549	Poison St. Andrews Cross	I/II	1,2	1,2	
	Antimony lactate	6.1	UN 1550	St. Andrews Cross	III	1,2	1,2	
	Antimony pentachloride, liquid	8	UN 1730	Corrosive	II	1	1	
	Antimony pentachloride, solutions	8	UN 1731	Corrosive	II	1	1	
	Antimony pentافluoride	8	UN 1732	Corrosive, Poison	II	1	5	
	Antimony potassium tartrate	6.1	UN 1551	St. Andrews Cross	III	1,2	1,2	Keep dry
	Antimony trichloride, liquid	8	UN 1733	Corrosive	II	1	1	
	Antimony trichloride, solid	8	UN 1733	Corrosive	II	1,2	1,2	
	Argon, compressed	2.2	UN 1006	Nonflammable Gas	-	1,3	1,3	
	Argon, liquid	2.2	UN 2039	Nonflammable Gas	-	1,3	1,3	
	Arsenic acid, liquid	6.1	UN 1553	Poison	I	1,2	1,2	
	Arsenic acid, solid	6.1	UN 1554	Poison	II	1,2	1,2	
	Arsenic bromide	6.1	UN 1555	Poison	II	1,2	1,2	
	Arsenic chloride. See Arsenic trichloride							
	Arsenic compounds, (liquid), n.o.s.	6.1	UN 1556	Poison St. Andrews Cross	I/II	1,2	1,2	
	Arsenic compounds, (solid), n.o.s.	6.1	UN 1557	Poison St. Andrews Cross	I/II	1,2	1,2	Keep dry.
	Arsenic, metallic	6.1	UN 1558	Poison	II	1,2	1,2	
	Arsenic pentoxide	6.1	UN 1559	Poison	II	1,2	1,2	
	Arsenic sulphides, (solid), n.o.s. See Arsenic compounds, (solid), n.o.s.							
	Arsenic trichloride	6.1	UN 1560	Poison	I	1,2	1,2	
	Arsenic trioxide	6.1	UN 1561	Poison	II	1,2	1,2	
	Arsenical dust	6.1	UN 1562	Poison	II	1,2	1,2	
	Arsenical fluo dust. See Arsenical dust							
	Arsine	2.3	UN 2188	Poison Gas, Flammable Gas	-	1	5	Stow "away from" living quarters
	Articles, explosive, n.o.s.	1.4B	UN 0350	Explosive (1.4B)	-	1,3	1,3	
		1.4C	UN 0351	Explosive (1.4C)	-	1,3	1,3	
		1.4D	UN 0352	Explosive (1.4D)	-	1,3	1,3	
		1.4G	UN 0353	Explosive (1.4G)	-	1,3	1,3	
		1.4S	UN 0349	None. Package to be marked "1.4S"	-	1,3	1,3	
	Asbestos, blue	9	UN 2212	None	II	1,2	1,2	
	Asbestos, white	9	UN 2590	None	III	1,2	1,2	
	Asphalt cut-backs. See Cut-backs, asphalt or bitumen							
	Bags, (empty and unwashed), having contained Potassium nitrate or sodium nitrate	4.1	UN 1359	Flammable Solid	III	1,2	5	
	Barium, alloys, non-pyrophoric	4.3	UN 1399	Dangerous When Wet	II	1,2	5	
	Barium alloys pyrophoric	4.2	UN 1854	Spontaneously Combustible	II	1	5	
	Barium azide, containing at least 50% water or alcohol	6.1	UN 1571	Poison	II	1,2	1,2	Stow "away from" heavy metals
	Barium chlorate	5.1	UN 1445	Oxidizer, Poison	II	1,2	1,2	Stow "away from" foodstuffs and powdered metals, separate from Ammonium compounds
	Barium compounds, n.o.s.	6.1	UN 1564	Poison St. Andrews Cross	I/II	1,2	1,2	
	Barium cyanide	6.1	UN 1565	Poison	I	1,2	1,2	Stow "away from" acids
	Barium, metal, non-pyrophoric	6.1	UN 1400	Dangerous When Wet	II	1,2	5	
	Barium nitrate	5.1	UN 1446	Oxidizer, Poison	II	1,2	5	
	Barium oxide	6.1	UN 1884	St. Andrews Cross	III	1,2	1,2	Stow "away from" powdered metals and foodstuffs
	Barium perchlorate	5.1	UN 1447	Oxidizer, Poison	II	1,2	1,2	Stow "away from" foodstuffs and "separate from" ammonium compounds and hydrogen peroxide
	Barium permanganate	5.1	UN 1448	Oxidizer, Poison	II	1,2	1,2	Keep dry. Stow "away from" foodstuffs
	Barium peroxide	5.1	UN 1449	Oxidizer, Poison	II	1,2	1,2	Keep dry. Stow "away from" foodstuffs
	Batteries, electric, storage, wet or filled	8	UN 1734	Corrosive	III	1,2	1,2	Glass carboys in hampers prohibited under deck
	Battery fluid, acid	8	UN 1735	Corrosive	II	1,2	1,2	
	Battery fluid, alkaline corrosive	8	UN 1735	Corrosive	II	1,2	1,2	
	Battery fluid, alkaline corrosive, with storage battery	8	UN 1735	Corrosive	II	1,2	1,2	
	Benzaldehyde	3.3	UN 1990	Flammable Liquid	III	1,2	1,2	
	Benzene	3.2	UN 1114	Flammable Liquid	II	1,2	1	
	Benzene sulphonyl chloride	6.1	UN 2226	St. Andrews Cross	III	1,2	1,2	Stow "away from" acids and alkalies
	Benzidine	6.1	UN 1885	Poison	II	1,2	1,2	
	Benzine	3.1	UN 1115	Flammable Liquid	II	1,2	5	
	Benzonitrile	3.2	UN 1115	Flammable Liquid	II	1,2	1	
	Benzotrichloride	8	UN 2226	Corrosive	II	1,2	1,2	Stow "away from" living quarters
	Benzoyl chloride	8	UN 1736	Corrosive	II	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Benzoyl peroxide, in a concentration of more than 72% but less than 95% as a paste	5.2	UN 2086	Organic Peroxide	I	1	5	

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	(3) IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	Benzoyl peroxide, <i>in a concentration of not more than 72% as a paste</i>	3.2	UN 2087	Organic Peroxide	II	1	5	
	Benzoyl peroxide, <i>in a concentration of not more than 55% as a paste</i>	3.2	UN 2087	Organic Peroxide	II	1	5	
	Benzoyl peroxide, <i>in a concentration of more than 80% but less than 95% with water</i>	3.2	UN 2088	Organic Peroxide	I	1	5	
	Benzoyl peroxide, <i>in a concentration of not more than 80% with water</i>	3.2	UN 2090	Organic Peroxide	II	1	5	
	Benzoyl peroxide, <i>in concentrations from 30% to maximum 52% with inert solid</i>	3.2	UN 2089	Organic Peroxide	II	1	5	
	Benzoyl peroxide, <i>technical pure or in a concentration of more than 52% with inert solid</i>	3.2	UN 2085	Organic Peroxide	I	1	5	
	Benzyl bromide	8	UN 1737	Corrosive	II	1	5	Keep dry
	Benzyl chloride	8	UN 1738	Corrosive	II	1	5	Keep dry. Stow 'separated longitudinally by an intervening complete compartment or hold from' explosives Stow 'away from' acids
	Benzyl chloroformate	8	UN 1739	Corrosive	I	1	5	Keep dry
	Benzyl cyanide, liquid	6.1	UN 2470	St. Andrews Cross	III	1,2	1,2	
	Benzylidene chloride	6.1	UN 1886	Poison	II	1	5	
	Beryllium compounds	6.1	UN 1566	Poison	II	1,2	1,2	
	Beryllium, metal powder	6.1	UN 1567	Poison, Flammable Solid	II	1,2	1,2	Segregation same as for flammable solids
	Bhuna	4.1	UN 1327	None	III	1,2	1,2	Slow 'away from' animal or vegetable oils
	Bifluorides, n.o.s.	8	UN 1740	Corrosive	II	1,2	1,2	Keep dry
	Bis-(1-hydroxy cyclohexyl) peroxide, technical pure	3.2	UN 2148	Organic Peroxide	II	1	5	
	Bis-(2-methylbenzoyl)peroxide, with at least 15% water	3.2	UN 2593	Organic Peroxide	I	1	5	Maximum transport temperature 30 deg C
	1,4-Bis(2-tert-butylperoxy isopropyl) benzene, or, 1,3-bis(2-tert-butylperoxy isopropyl) benzene, and mixtures thereof, <i>(including technical pure or in a concentration of more than 40% with inert solid)</i>	3.2	UN 2112	Organic Peroxide	II	1	5	
	Bis-(3,5-trimethyl-1,2-dioxolanyl-3)peroxide, as a paste with at least 50% phegtamer	3.2	UN 2597	Organic Peroxide	II	1	5	Maximum transport temperature 30 deg C
	2,2-Bis(4,4-di-tert-butylperoxy cyclohexyl) propane, maximum concentration 42% with inert solid	3.2	UN 2168	Organic Peroxide	II	1	5	
	Bis(4-tert-butyl cyclohexyl) perdicarbonate, technical pure	3.2	UN 2154	Organic Peroxide	II	1	5	Maximum transport temperature 30 deg C
	1,1-Bis(tert-butylperoxy)-3,3,5-trimethyl cyclohexane, technical pure	3.2	UN 2145	Organic Peroxide	II	1	5	
	1,1-Bis(tert-butylperoxy)-3,3,5-trimethyl cyclohexane, maximum concentration 37% in solvent	3.2	UN 2146	Organic Peroxide	II	1	5	
	1,1-Bis(tert-butylperoxy)-3,3,5-trimethyl cyclohexane, maximum concentration 38% with inert solid	3.2	UN 2147	Organic Peroxide	II	1	5	
	2,2-Bis(tert-butylperoxy) butane, maximum concentration 55% in solution	3.2	UN 2111	Organic Peroxide	II	1	5	
	1,1-Bis(tert-butylperoxy) cyclohexane, technical pure	3.2	UN 2179	Organic Peroxide	II	1	5	
	1,1-Bis(tert-butylperoxy) cyclohexane, maximum concentration 77% in solution	3.2	UN 2180	Organic Peroxide	II	1	5	
	1,2-Bis(tert-butylperoxy) cyclohexane, maximum concentration 77% in solution	3.2	UN 2181	Organic Peroxide	II	1	5	
	Blasting cap assemblies, non electric	1.4 B	UN 0361	Explosive (1.4B)	--	1,3	1,3	
	Blasting caps, electric	1.4 B	UN 0255	Explosive (1.4B)	--	1,2	5	Portable magazine or metal locker. Do not handle blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting caps, non-electric	1.4 B	UN 0267	Explosive (1.4B)	--	1,2	5	Portable magazine or metal locker. Do not handle blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Bleaching powder. See Calcium hypochlorite mixtures, dry, containing 39% or less, but more than 10% available chlorine							
	Blue asbestos. See Asbestos, blue							
	Bombs, smoke, containing a corrosive liquid, non-explosive, without initiating device	8	UN 2028	Corrosive	II	1,2	5	Keep dry. Stow 'away from' living quarters
	Borate and chlorate, mixtures	5.1	UN 1458	Oxidizer	II	1,2	5	Stow 'away from' powdered metals and 'separate from' ammonium compounds
	Bordeaux arsenites, liquid	6.1	UN 1568	Poison	I	1,2	1,2	
	Bordeaux arsenites, solid	6.1	UN 1568	Poison	II	1,2	1,2	
	Borneol	4.1	UN 1312	None. Package to be marked 'Class 4.1'	III	1,2	1,2	
	Boron trichloride	2.3	UN 1741	Poison Gas, Corrosive	--	1	5	Shade from radiant heat. Stow 'away from' foodstuffs and living quarters
	Boron trifluoride	2.3	UN 1008	Poison Gas	--	1	5	Stow 'away from' foodstuffs and living quarters
	Boron trifluoride acetic acid complex	8	UN 1742	Corrosive	II	1,2	1,2	
	Boron trifluoride propionic acid complex	8	UN 1743	Corrosive	II	1,2	1,2	
	Box toe gum. See Nitrocellulose							
	Brake fluid, hydraulic	3.2	UN 1118	Flammable Liquid	II	1,2	1	
	Bromates, (inorganic), n.o.s.	5.1	UN 1450	Oxidizer	II	1,2	1,2	Stow 'away from' powdered metals and 'separate from' ammonium compounds
	Bromine, (and solutions)	8	UN 1744	Corrosive, Poison	I	1	5	Keep cool
	Bromine pentafluoride	8	UN 1745	Corrosive, Poison, Oxidizer	I	1	5	Shade from radiant heat. Stow 'away from' all other corrosives
	Bromine trifluoride	8	UN 1746	Corrosive, Poison	I	1	5	Shade from radiant heat
	1-Bromo-2,3-epoxypropane	6.1	UN 2558	Poison	I	1	5	

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Ident- ification Number	(5) Label(s) required	Packaging Group	(7) Vessel Storage Requirements		
						(a) Cargo vessel	(b) Pass- enger vessel	(c) Other requirements
	Bromosuccinic acid, solid	8	UN 1933A	Corrosive	II	1,2	1,2	Keep dry
	Bromosuccinic acid, solution	8	UN 1938	Corrosive	III	1,2	1,2	Glass carboys in hampers not permitted under deck
	Bromoacetone	6.1	UN 1569	Poison	II	1	5	Segregation same as for flammable liquids
	Bromoacetyl bromide	6	UN 2513	Corrosive	III	1	5	Glass carboys prohibited on passenger vessels
	Bromobenzyl cyanide	6.1	UN 1694	Poison	I	1	5	Keep cool
	Bromoform	9	UN 1887	None	III	1,2	1,2	Stow "away from" foodstuffs
	Bromotrifluoromethane	2.2	UN 1009	Nonflammable Gas	-	1,2	1,2	
	Brucine	6.1	UN 1570	Poison	II	1,2	1,2	
	Butadiene, inhibited	2.1	UN 1010	Inflammable Gas	-	1,2	1	Stow "away from" living quarters
	Butane- or butane mixtures	2.1	UN 1011	Flammable Gas	-	1,2	1	Stow "away from" living quarters
	Butanol	3.3	UN 1120	Flammable Liquid	II	1,2	1,2	
	sec-Butanol	3.3	UN 1121	Flammable Liquid	II	1,2	1,2	
	tert-Butanol	3.2	UN 1122	Flammable Liquid	II	1,2	1	
	n-Butyl-4,4-bis-(tert-butyl-peroxy) valerate, technical pure	5.2	UN 2140	Organic Peroxide	II	1	5	
	n-Butyl-4,4-bis-(tert-butyl-peroxy) valerate, maximum concentration 52% with inhibitors	5.2	UN 2141	Organic Peroxide	II	1	5	
	n-Butyl acetate	3.2	UN 1123	Flammable Liquid	II	1,2	1	
	sec-Butyl acetate	3.2	UN 1124	Flammable Liquid	II	1,2	1	
	Butyl alcohol. See Butanol							
	sec-Butyl alcohol. See sec-Butanol							
	tert-Butyl alcohol. See tert-Butanol							
	n-Butyl bromide	3.3	UN 1125	Flammable Liquid	II	1,2	1,2	
	n-Butyl chloride	3.2	UN 1127	Flammable Liquid	II	1,2	1	
	tert-Butyl cumene peroxide. See tert-Butyl cumyl peroxide							
	tert-Butyl-cumyl peroxide, technical pure	5.2	UN 2051	Organic Peroxide	II	1	5	
	tert-Butyl diperoxyphthalate. See tert-Butyl diperphthalate							
	tert-Butyl diperphthalate, maximum concentration 55% in solution	5.2	UN 2107	Organic Peroxide	II	1	5	
	tert-Butyl diperphthalate, maximum concentration 55% as a paste	5.2	UN 2108	Organic Peroxide	II	1	5	
	tert-Butyl diperphthalate, technical/pure	5.2	UN 2106	Organic Peroxide	II	1	5	
	Butyl ether. See Dibutyl ethers							
	n-Butyl formate	3.2	UN 1128	Flammable Liquid	II	1,2	1	
	tert-Butyl hydroperoxide, in a concentration over 72% to a maximum 90% with water	5.2	UN 2094	Organic Peroxide	I	1	5	
	tert-Butyl hydroperoxide, maximum concentration 72% with water	5.2	UN 2093	Organic Peroxide	II	1	5	
	tert-Butyl hydroperoxide, maximum concentration 80% in di-tert-butyl peroxide and/or solvent	5.2	UN 2092	Organic Peroxide, flammable liquid (only if flask containing solvent is 25 deg C. or below)	I	1	5	
	tert-Butyl monoperoxyphthalate. See tert-Butyl monoperphthalate							
	tert-Butyl monoperphthalate, technical pure	5.2	UN 2105	Organic Peroxide	II	1	5	
	tert-Butyl per-(2-ethyl) hexanoate, technical pure	5.2	UN 2143	Organic Peroxide	II	1	5	Maximum transport temperature 20 deg C
	tert-Butyl per-acdecanoate, maximum concentration 77% in solution	5.2	UN 2177	Organic Peroxide	II	1	5	Maximum transport temperature 5 deg C
	tert-Butyl per-caproate, in a concentration of more than 52% to a maximum concentration of 76% in solution	5.2	UN 2095	Organic Peroxide	II	1	5	
	tert-Butyl per-caproate, maximum concentration 52% in solution	5.2	UN 2096	Organic Peroxide	II	1	5	
	tert-Butyl perbenzoate, maximum concentration 75% in solution	5.2	UN 2098	Organic Peroxide	II	1	5	
	tert-Butyl perbenzoate, technical pure or in a concentration of more than 75% in solution	5.2	UN 2097	Organic Peroxide	II	1	5	
	tert-Butyl percarbamate, maximum concentration 76% in solution	5.2	UN 2183	Organic Peroxide	II	1	5	Maximum transport temperature -10 deg C
	n-Butyl perdicarbonate, in a concentration of more than 27% to a maximum concentration of 52% in solution	5.2	UN 2169	Organic Peroxide	II	1	5	Maximum transport temperature 0 deg C
	n-Butyl perdicarbonate, maximum concentration 27% in solution	5.2	UN 2170	Organic Peroxide	II	1	5	
	tert-Butyl perdehydroacetate, (in a maximum concentration of 33%), with tert-butyl perbenzoate, (in a maximum concentration of 33%), and solvent	5.2	UN 2251	Organic Peroxide	II	1	5	
	tert-Butyl perdiethylacetate, technical pure	5.2	UN 2144	Organic Peroxide	II	1	5	Maximum transport temperature 15 deg C
	tert-Butyl perisobutyrate, in a concentration of more than 52% to a maximum concentration of 77% in solution	5.2	UN 2142	Organic Peroxide	II	1	5	Maximum transport temperature 15 deg C
	tert-Butyl perisobutyrate, maximum concentration 52% in solution	5.2	UN 2562	Organic Peroxide	II	1	5	Maximum transport temperature 15 deg C
	tert-Butyl permaleate, maximum concentration 55% in solution	5.2	UN 2100	Organic Peroxide	II	1	5	
	tert-Butyl permaleate, maximum concentration 55% as a paste	5.2	UN 2101	Organic Peroxide	II	1	5	
	tert-Butyl permaleate, technical pure	5.2	UN 2099	Organic Peroxide	II	1	5	
	tert-Butyl peroxide, technical pure	5.2	UN 2102	Organic Peroxide, flammable liquid	II	1	5	
	tert-Butyl peroxy-(2-ethyl) hexanoate. See tert-Butyl per-(2-ethyl) hexanoate							
	tert-Butyl peroxy-3,5,5-trimethyl hexanoate, technical pure	5.2	UN 2104	Organic Peroxide	II	1	5	
	tert-Butyl peroxy isopropyl carbonate, technical pure	5.2	UN 2103	Organic Peroxide	II	1	5	
	tert-Butyl peroxy-neodecanoate. See tert-Butyl per-neodecanoate							
	tert-Butyl peroxyacetate. See tert-Butyl peracetate							
	tert-Butyl peroxybenzoate. See tert-Butyl perbenzoate							
	tert-Butyl peroxyhexanoate. See tert-Butyl perhexanoate							
	n-Butyl peroxydicarbonate. See n-Butyl perdicarbonate							

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	tert-Butyl peroxydiethylacetate. See tert-Butyl perdiethylacetate tert-Butyl peroxydiethylacetate with tert-butyl peroxybenzoate. See tert-Butyl perdiethylacetate with tert-butyl perbenzoate tert-Butyl peroxyisobutyrate. See tert-Butyl perisobutyrate tert-Butyl peroxymalate. See tert-Butyl permaleate tert-Butyl peroxypivalate. See tert-Butyl pivalate tert-Butyl perpivalate, maximum concentration 77% in solution Butyl phosphoric acid. See Acid butyl phosphate Butyl propionate Butyl trichlorosilane	5.2	UN 2110	Organic Peroxide	II	1	5	Maximum transport temperature 0 deg C
	n-Butylamine Butylene tert-Butylpernecodecanoate, technical pure 3-tert-Butylperoxy-3-phenyl phthalide, technical pure Butylphenols, liquid Butylphenols, solid Butyraldehyde Cacodylic acid Cadmium compounds Cesium, metal Cesium nitrate Cesium, powdered. See Pyrophoric metals Calcium arsenite Calcium arsenite and arsenite, solid mixtures Calcium bisulphite, solution. See Calcium hydrogen sulphite, solution Calcium carbide Calcium chloride Calcium chlorite Calcium cyanamide, containing more than 0.1% of calcium carbide Calcium cyanide Calcium dithionite Calcium hydride Calcium hydrogen sulphite, solution Calcium hypochlorite, dry, including mixtures containing more than 39% available chlorine (2.8% available oxygen) Calcium hypochlorite mixtures, dry containing 39% or less, but not more than 10% available chlorine Calcium, metal, and alloys, non-pyrophoric Calcium nitrate Calcium perchlorate Calcium permanganate Calcium peroxide Calcium phosphide Calcium, powdered Calcium resinate, fused Calcium resinate, technical pure Calcium silicide Calcium silicon Camphor oil Capryloyl peroxide. See n-Octanoyl peroxide Caps, blasting. See Blasting caps Caps, percussion Caps, toy. See Amorces Carbolic acid. See Phenol Carbon, activated	3.2 2.1 5.2 5.2 6.1 6.1 3.2 6.1 6.1 4.3 6.1 4.3 5.1 5.1 3.2 6.1 6.1 4.2 4.3 8 5.1 4.3 5.1 5.1 4.3 5.1 4.3 4.2 4.1 4.1 4.3 4.3 4.2 4.1 4.1 4.1 2.2 2.2 2.2 3.1 2.1 4.2	UN 1914 UN 1747 UN 1125 UN 1012 UN 2594 UN 2596 UN 2228 UN 2229 UN 1129 UN 1572 UN 2570 UN 1407 UN 1451 UN 1573 UN 1574 UN 1403 UN 1402 UN 1452 UN 1453 UN 1403 UN 1575 UN 1924 UN 1404 UN 1901 UN 1748 UN 2208 UN 1401 UN 1454 UN 1455 UN 1456 UN 1457 UN 1360 UN 1855 UN 1314 UN 1313 UN 1403 UN 1406 UN 1130 UN 1013 UN 1015 UN 1014 UN 1131 UN 1016 UN 1361	Flammable Liquid Corrosive	II II	1,2 1	1,2 1	Keep dry. Stow 'separated longitudinally by an intervening complete compartment or hold from' explosives
								Stow 'away from' living quarters
								Maximum transport temperature -5 deg C
								Stow 'away from' acids
								Stow 'away from' copper, its alloys and its salts
								Stow 'away from' powdered metals and 'separate from' ammonium compounds
								Stow 'away from' powdered metals and cyanides, 'separate from' ammonium compounds
								Stow 'separate from' flammable liquids and acids, 'away from' combustible materials
								Stow 'separate from' ammonium compounds and hydrogen peroxide
								Keep dry
								Keep cool
								Keep cool. Not permitted on any vessel carrying explosives
								Stow 'away from' living quarters
								Keep cool. Stow 'away from' oily matter

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	(5) Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(6) Other requirements
	Carbon paper. See Paper, treated with unsaturated oils, incompletely dried	3.2	UN 1132	Flammable Liquid	II	1,2	1	
	Carbon remover, liquid							
	Carbon sulphide. See Carbon disulphide							
	Carbon tetrabromide	6.1	UN 2516	St. Andrews Cross	III	1,2	1,2	Shade from radiant heat
	Carbon tetrachloride	6.1	UN 1846	Poison	II	1,2	1,2	
	Carbonyl chloride. See Phosgene							
	Carbonyl fluoride	2.3	UN 2417	Poison Gas	-	1	5	
	Carbonyl sulfide	2.3	UN 2204	Poison Gas, Flammable Gas	-	1	5	Stow 'away from' living quarters
	Cartouche	2.1	UN 2037	Flammable Gas	-			Stow 'away from' living quarters
N	Cartridge cases, empty, with primer. See Cases, cartridges, empty, with primer							
	Cartridges for weapons, blank	1.4 C 1.4 S	UN 0338 UN 0014	Explosive (1.4C) None. Package to be marked '1.4S'	-	1,3	1,3	
	Cartridges for weapons, other than blank	1.4 S	UN 0012	None. Package to be marked '1.4S'	-	1,3	1,3	
	Cartridges for weapons, with inert projectile	1.4 C	UN 0339	Explosive (1.4C)	-	1,3	1,3	
	Cartridges, oil-well	1.4 C	UN 0278	Explosive (1.4C)	-	1,3	1,3	
	Cartridges, power device	1.4 C 1.4 S	UN 0216 UN 0323	Explosive (1.4C) None. Package to be marked '1.4S'	-	1,3	1,3	
	Cartridges, signal	1.4 G	UN 0312	Explosive (1.4G)	-	1,3	1,3	
	Cases, cartridge, empty, with primer	1.4 C	UN 0379	Explosive (1.4C)	-	1,3	1,3	
	Cases, cartridges, empty, with primer	1.4 S	UN 0055	None. Package to be marked '1.4S'	-	1,3	1,3	
	Casinghead gasoline	3.1	UN 1257	Flammable Liquid	II	1,2	5	
	Caustic alkali liquids, n.o.s.	8	UN 1719	Corrosive	II	1,2	1,2	
	Caustic potash. See Potassium hydroxide, solution							
	Caustic potash, solid. See Potassium-hydroxide, solid							
	Celluloid, in blocks, rods, rolls, sheets, tubes, etc. (scrap excluded)	4.1	UN 2000	Flammable Solid	III	1,2	1,2	
	Celluloid, scrap	4.2	UN 2002	Spontaneously Combustible	II	1	5	
	Cement, adhesive, (containing a flammable liquid), n.o.s.	3.2 3.3	UN 1133 UN II33	Flammable Liquid Flammable Liquid	II	1,2	1	
	Cement, (liquid), n.o.s. See Cement, adhesive, (containing a flammable liquid), n.o.s.							
	Charcoal, activated. See Carbon, activated							
	Charcoal, non-activated, of animal or vegetable origin. See Carbon, non-activated							
	Charges, shaped, flexible, linear, metal clad	1.4 D	UN 0237	Explosive (1.4D)	-	1,3	1,3	
	Chloral, anhydrous, inhibited	6.1	UN 2075	Poison	II	1	5	
	Chlorate and borate mixtures. See Borate and chlorate mixtures							
	Chlorate and magnesium chloride, mixtures	5.1	UN 1459	Oxidizer	II	1,2	5	Stow 'away from' powdered metals and 'separate from' ammonium compounds
	Chlorates, (inorganic), n.o.s.	5.1	UN 1461	Oxidizer	II	1,2	5	Stow 'away from' powdered metals and 'separate from' ammonium compounds
	Chlorinated anthracene oil	6.1	UN 2230	Poison	II	1,3	1,3	Segregation same as for flammable liquids
	Chlorine	2.3	UN 1017	Poison Gas, Oxidizer	-	1	5	Stow 'away from' sources of heat. Segregation same as for flammable liquids
	Chlorine trifluoride	2.3	UN 1749	Poison Gas, Oxidizer, Corrosive	-	1,2	5	Stow 'away from' organic materials, 'separate from' acetylene, ammonia, diborane, and hydrogen
	Chlorites, (inorganic), n.o.s.	5.1	UN 1462	Oxidizer	II	1,2	5	Stow 'away from' food stuffs and living quarters
	3-Chloro-4-methylphenyl isocyanate	6.1	UN 2236	Poison	II	1,2	1,2	Stow 'away from' powdered metals and 'separate from' ammonium compounds
	p-Chloro-o-anisidine	6.1	UN 2233	St. Andrews Cross	III	1,2	1,2	Shade from radiant heat
	Chloro-o-nitroethane	6.1	UN 2433	St. Andrews Cross	III	1,2	1,2	
	4-Chloro-o-toluidine hydrochloride	6.1	UN 1579	St. Andrews Cross	III	1,2	1,2	
	Chloroacetaldehyde	6.1	UN 2232	Poison	II	1	5	
	Chloroacetic acid, liquid	8	UN 1750	Corrosive	II	1,2	1,2	Glass carboys in hampers not permitted under deck
	Chloroacetic acid, solid	8	UN 1751	Corrosive	II	1,2	1,2	Keep dry
	Chloroacetone, stabilized	6.1	UN 1695	Poison	II	1	5	
	Chloroacophenone	6.1	UN 1697	Poison	II	1	5	
	Chloroacetyl chloride	8	UN 1752	Corrosive	II	1	5	Keep dry
	Chloroanilines, liquid	6.1	UN 2019	Poison	II	1,2	1,2	
	Chloroanilines, solid	6.1	UN 2013	Poison	II	1,2	1,2	
	Chlorobenzene	3.3	UN 1134	Flammable Liquid	II	1,3	1,3	
	p-Chlorobenzoyl peroxide, maximum concentration 75% with water	5.2	UN 2113	Organic Peroxide	II	1	5	
	p-Chlorobenzoyl peroxide, maximum concentration 52% as a paste	5.2	UN 2114	Organic Peroxide	II	1	5	
	p-Chlorobenzoyl peroxide, maximum concentration 52% in solution	5.2	UN 2115	Organic Peroxide	II	1	5	
	p-Chlorobenzyl chloride	6.1	UN 2235	St. Andrews Cross	III	1,2	1,2	
	Chlorodifluorobromomethane	2.2	UN 1974	Nonflammable Gas	-	1,2	1,2	

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	(3) IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pass- enger vesel	(c) Other requirements
	Chlorodifluoromethane	2.2	UN 1018	Nonflammable Gas	--	1,2	1,2	
	Chlorodifluoromethane and chloropentafluoroethane, mixture with a fixed boiling point containing about 49% of chlorodifluoromethane	2.2	UN 1973	Nonflammable Gas	--	1,2	1,2	
	Chlorodinitrobenzene	6.1	UN 1577	Poison	II	1,2	1,2	
	2-Chloroethanol	3.3	UN 1135	Flammable Liquid	II	1,2	1,2	
	Chloroform	6.1	UN 1888	Poison	II	1,2	1,2	
	Chloronitroanilines	6.1	UN 2237	St. Andrews Cross	III	1,2	1,2	
	Chloronitrobenzenes (<i>o</i> , <i>m</i> , <i>p</i>)	6.1	UN 1578	Poison	II	1,2	1,2	
	Chloropentfluoroethane	2.2	UN 1020	Nonflammable Gas	--	1,2	1,2	
	<i>m</i> -Chloroperoxybenzoic acid, maximum concentration 86%	5.2	UN 2755	Organic Peroxide	II	1	5	
	Chlorophenates, liquid	6.1	UN 2021	St. Andrews Cross	III	1,2	1,2	
	Chlorophenates, solid	6.1	UN 2020	St. Andrews Cross	III	1,2	1,2	
	Chlorophenols, liquid	6.1	UN 2021	St. Andrews Cross	III	1,2	1,2	
	Chlorophenols, solid	6.1	UN 2020	St. Andrews Cross	III	1,2	1,2	
	Chlorophenyl trichlorosilane	8	UN 1753	Corrosive	II	1	1	Keep dry
	Chloropicrin	6.1	UN 1380	Poison	I	1	5	
	Chloropicrin and methyl bromide, mixture	6.1	UN 1581	Poison	--	1	5	Shade from radiant heat
	Chloropicrin and methyl chloride, mixture	6.1	UN 1382	Poison	--	1	5	
	Chloropicrin mixtures, n.o.s.	6.1	UN 1583	Poison	I/II	1	5	
	Chloreplatinic acid, solid	8	UN 2507	Corrosive	III	1,2	1,2	
	Chlorgrene, inhibited	3.2	UN 1991	Flammable Liquid	I	1,2	1	
	Chloropropionic acid	8	UN 2511	Corrosive	III	1,2	1,2	Glass carboys prohibited on passenger vessels
	Chlorosulphonic acid, with or without sulphur trioxide	8	UN 1754	Corrosive	I	1	4	Glass carboys prohibited on passenger vessels
	Chlorotetrafluoroethane	2.2	UN 1021	Nonflammable Gas	--	1,2	1,2	
	Chlorotoluuidines	6.1	UN 2239	St. Andrews Cross	III	1,2	1,2	
	Chlorotrifluoroethane. See Trifluorochloroethane							
	Chlorotrifluoroethylene. See Trifluorochloroethylene							
	Chlorotrifluoromethane	2.2	UN 1022	Nonflammable Gas	--	1,2	1,2	
	Chromic acid, solid. See Chromium trioxide, anhydrous							
	Chromic acid, solution	8	UN 1755	Corrosive	II	1	1	
	Chromic anhydride. See Chromium trioxide, anhydrous							
	Chromic fluoride, solid	8	UN 1756	Corrosive	II	1,2	1,2	
	Chromic fluoride, solution	8	UN 1757	Corrosive	II	1,2	1,2	
	Chromium oxychloride	8	UN 1758	Corrosive	I	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Chromium trioxide, anhydrous	5.1	UN 1463	Oxidizer, Corrosive	II	1,2	1,2	Stow 'away from' foodstuffs
	Chromosulphuric acid	8	UN 2240	Corrosive	I	1,2	1	Carboys not permitted on passenger vessels and permitted only on deck on cargo vessels
	Chrysotile. See Asbestos, white							
	Cigarettes, self-lighting	4.1	UN 1867	Flammable Solid	III	1,2	1,2	Keep dry
	Cleaning compound. See Flammable liquid, preparations, n.o.s.							
	Cleaning compounds, liquid, corrosive	8	UN 1759	Corrosive	II	1,2	1,2	
	Coal gas	2.1	UN 1023	Flammable Gas, Poison Gas	--	1	5	Stow 'away from' living quarters
	Coal tar distillate	3.2	UN 1136	Flammable Liquid	--	1,2	1	
	Coal tar light oil	3.3	UN 1136	Flammable Liquid	--	1,2	1,2	
	Coal tar naphtha	3.2	UN 1137	Flammable Liquid	--	1,2	1	
	Coal tar oil. See Coal tar distillate	3.3	UN 1137	Flammable Liquid	--	1,2	1,2	
	Coating solution	3.2	UN 2553	Flammable Liquid	II	1,2	1	
	Cobalt naphthenates, powder	3.3	UN 1139	Flammable Liquid	II	1,2	1,2	
	Cobalt resinate, precipitated	4.1	UN 2001	Flammable Solid	III	1,2	1,2	
	Coccus, solid	4.1	UN 1318	Flammable Solid	III	1,2	1,2	
	Cologne spirits. See Ethanol							
	Columbian spirits. See Methanol							
	Components, explosive train, n.o.s.	1.4B	UN 0383	Explosive (1.4B)	--	1,3	1,3	
		1.4S	UN 0384	None. Package to be marked '1.4S'	--	1,3	1,3	
	Compressed or liquefied gases, (flammable, non-toxic), n.o.s.	2.1	UN 1954	Flammable Gas	--	1	5	Stow 'away from' living quarters
	Compressed or liquefied gases, (flammable, toxic), n.o.s.	2.1	UN 1953	Flammable Gas, Poison Gas	--	1	5	Stow 'away from' living quarters
	Compressed or liquefied gases, (non-flammable, non-toxic), n.o.s.	2.2	UN 1956	Nonflammable Gas	--	1,2	1,2	
	Compressed or liquefied gases, (non-flammable, toxic), n.o.s.	2.3	UN 1955	Poison Gas	--	1	5	Stow 'away from' living quarters
	Copper acetoarsenite	6.1	UN 1585	Poison	II	1,2	1,2	
	Copper arsenite	6.1	UN 1586	Poison	II	1,2	1,2	
	Copper cyanide	6.1	UN 1587	Poison	II	1,2	1,2	Stow 'away from' acids
	Copra	4.2	UN 1363	None. Package to be marked 'Class 4.2'	III	1,2	1,2	Keep dry. Protect from sparks and open flame
	Cord, detonating, flexible	1.4 D	UN 0289	Explosive (1.4D)	--	1,3	1,3	
	Cord, detonating, mild effect, metal clad	1.4 D	UN 0104	Explosive (1.4D)	--	1,3	1,3	
	Cord, igniter	1.4 G	UN 0066	Explosive (1.4G)	--	1,3	1,3	

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172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	Corrosive liquids, n.o.s.	9	UN 1760	Corrosive	II	1	4	
	Corrosive solids, n.o.s.	9	UN 1759	Corrosive	I/II/III	1	5	
	Cosmetics, n.o.s. See Perfumery products							
	Cotton, dry. See Fibres, vegetable, dry	4.2	UN 1364	Spontaneously Combustible	III	1,2	1,2	Keep dry. Stow 'separate from' explosives, animal oils or vegetable oils
	Cotton waste, oily	4.2	UN 1365	Spontaneously Combustible	III	1,2	1,2	Keep dry
	Cotton, wet or contaminated	4.2	UN 2076	Poison	II	1,2	1,2	
	Cresols (o-, m-, p-)	6.1	UN 2022	Poison	II	1,2	1,2	
	Cresylic acid							
	Crocidolite. See Asbestos, blue	3.2	UN 1143	Flammable Liquid	I	1,2	1	
	Crotonaldehyde, inhibited	3.1	UN 1144	Flammable Liquid	I	1,2	3	Keep cool
	Crotonylene	5.2	UN 2116	Organic Peroxide	I	1	3	
	Cumene hydroperoxide, technical pure							
	Cupric cyanide. See Copper cyanide	8	UN 1761	Corrosive, Poison	II	1,2	1,2	
	Cupric(hydroxymethyl)amine, solution	3.2	UN 1999	Flammable Liquid	II	1,2	1	
	Cut-backs, asphalt or bitumen	3.3	UN 1999	Flammable Liquid	II	1,2	1,2	
	Cutters, cable, explosive	1.4-5	UN 0070	None. Package to be marked '1.4 S'	-	1,3	1,3	
	Cyanide mixtures. See Cyanides, (inorganic), n.o.s.	6.1	UN 1588	Poison	I/II	1,2	1,2	Stow 'away from' acids.
	Cyanides, (inorganic), n.o.s.	6.1	UN 1935	Poison	III	1,2	1,2	Stow 'away from' acids
	Cyanides, solutions	6.1	UN 1026	Poison Gas, Flammable Gas	I	1,2	1	Stow 'away from' foodstuffs and living quarters
	Cyanogen	2.3	UN 1889	Poison, Corrosive	I	1	3	Shade from radiant heat. Segregation same as for corrosives
	Cyanogen bromide							
	Cyanogen chloride, inhibited	2.3	UN 1589	Poison Gas	-	1	5	Keep dry
	Cyanuric chloride (cyanuric trichloride)	8	UN 2670	Corrosive	II	1,2	1,2	Stow 'away from' living quarters
	1,5,9-Cyclododecatriene	8	UN 2518	Corrosive	III	1	5	
	Cyclohexane	3.1	UN 1145	Flammable Liquid	II	1,2	5	
	Cyclohexanone	3.3	UN 1915	Flammable Liquid	III	1,2	1,2	
	Cyclohexanone peroxide. See 1-Hydroxy-1-hydroperoxy bicyclohexyl peroxide and mixtures, etc.	8	UN 1762	Corrosive	II	1	1	Keep dry
	Cyclohexenyl trichlorosilane	6.1	UN 2488	Poison	II	1	5	Shade from radiant heat. Stow 'away from' sources of heat
	Cyclohexyl isocyanate	8	UN 1763	Corrosive	II	1	1	Keep dry
	Cyclohexyl.trichlorosilane							
	Cyclopentane	3.1	UN 1146	Flammable Liquid	II	1,2	1	Stow 'away from' living quarters
	Cyclopropane	2.1	UN 1027	Flammable Gas	-	1,2	1	
	p-Cymene	3.3	UN 2046	Flammable Liquid	II	1,2	1,2	
	Decaborane	4.1	UN 1868	Flammable Solid, Poison	II	1,2	1,2	
	Decahydronaphthalene	3.3	UN 1147	Flammable Liquid	II	1,2	1,2	
	Decalin. See: Decahydronaphthalene							
	Decasoyl peroxide, technical pure	5.2	UN 2120	Organic Peroxide	II	1	5	Maximum transport temperature 15 deg C
	Detonators for ammunition	1.4B	UN 0065	Explosive (1.4B)	-	1,3	1,3	
		1.4B	UN 0366	None. Package to be marked '1.4S'	-	1,3	1,3	
	Deuterium	2.1	UN 1957	Flammable Gas	-	1,2	5	Stow 'away from' living quarters
	Di-(2-ethylhexyl) perdicarbonate, technical pure	5.2	UN 2122	Organic Peroxide	II	1	5	Maximum transport temperature -20 deg C
	Di-(2-ethylhexyl) perdicarbonate, maximum concentration 67% in solution	5.2	UN 2123	Organic Peroxide	II	1	5	Maximum transport temperature -15 deg C
	Di-(2-ethylhexyl) peroxydicarbonate. See Di-(2-ethylhexyl) perdicarbonate							
	Di-(n-butyl)amine	8	UN 2248	Corrosive, Flammable Liquid	II	1,2	1,2	Segregation same as for flammable liquids
	Di-n-propyl perdicarbonate. See Di-n-propyl peroxydicarbonate	4.2	UN 2176	Organic Peroxide	I	1	5	Maximum transport temperature -25 deg C
	Di-n-propyl peroxydicarbonate, technical pure							
	Di-sec-butyl perdicarbonate, maximum concentration 52% in solution	5.2	UN 2151	Organic Peroxide	II	1	5	Maximum transport temperature -40 deg C
	Di-sec-butyl perdicarbonate, technical pure	5.2	UN 2150	Organic Peroxide	I	1	5	Maximum transport temperature -20 deg C
	Di-sec-butyl peroxydicarbonate. See Di-sec-butyl perdicarbonate							
	Diacetone alcohol	3.2	UN 1148	Flammable Liquid	II	1,2	1	Maximum transport temperature 25 deg C
	Diacetone alcohol peroxides, maximum 57% in solution with maximum 9% hydrogen peroxide, minimum 26% diacetone alcohol and minimum 5% water; total active oxygen content maximum 10%	5.2	UN 2163	Flammable Liquid	II/III	1,2	1,2	
	Dibenzyl perdicarbonate, maximum concentration 87% with water	5.2	UN 2149	Organic Peroxide	I	1	5	Maximum transport temperature 25 deg C
	Dibenzyl peroxycarbonate. See Dibenzyl perdicarbonate							
	Dibenzyl dichlorosilane	8	UN 2434	Corrosive	II	1	1	Keep dry
	Diborane	2.1	UN 1911	Flammable Gas, Poison Gas	-	1	5	Stow 'away from' foodstuffs and living quarters, 'separated from' chlorine
	Diethyl ethers	3.3	UN 1749	Flammable Liquid	III	1,2	1,2	
	Dicetyl perdicarbonate, technical pure	5.2	UN 2164	Organic Peroxide	II	1	5	Maximum transport temperature 20 deg C
	Dicetyl peroxydicarbonate. See Dicetyl perdicarbonate							

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identification Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
Dichloroacetic acid		8	UN 1764	Corrosive	II	1,2	1,2	Glass carboy in hampers not permitted under deck
Dichloroacetyl chloride		8	UN 1754	Corrosive	II	1	5	Keep dry
Dichloroanilines		6.1	UN 1590	Poison	II	1,2	1,2	Stow 'away from' acids
p-Dichlorobenzene		9	UN 1592	None	III	1,2	1,2	Stow 'away from' foodstuffs
Dichlorobenzene (<i>o</i> , <i>m</i> -)		6.1	UN 1591	St. Andrews Cross	III	1,2	1,2	
2,4-Dichlorobenzoyl peroxide, maximum concentration 73% with water		5.2	UN 2137	Organic Peroxide	II	1	5	
2,4-Dichlorobenzoyl peroxide, maximum concentration 52% as a paste		5.2	UN 2138	Organic Peroxide	II	1	5	
2,4-Dichlorobenzoyl peroxide, maximum concentration 52% in solution		5.2	UN 2139	Organic Peroxide	II	1	5	
Dichlorodifluoromethane		2.2	UN 1028	Nonflammable Gas	-	1,2	1,2	
sym-Dichlorodimethyl ether		6.1	UN 2249	Poison	I	1	5	
Dichloroethyl ether		3.3	UN 1916	Flammable Liquid, Poison	II	1,2	1,2	
Dichloroethylene		3.2	UN 1150	Flammable Liquid	II	1,2	1	
Dichloroisopropyl ether		6.1	UN 2490	Poison	II	1,2	1	
Dichloromethane		6.1	UN 1593	St. Andrews Cross	III	1,2	1,2	
Dichloromonofluoromethane		2.2	UN 1029	Nonflammable Gas	-	1,2	1,2	
Dichloropentanes		3.3	UN 1152	Flammable Liquid	II	1,2	1,2	
Dichlorophenyl isocyanates		6.1	UN 2250	Poison	II	1,3	1,3	Shade from radiant heat. Stow 'away from' sources of heat
Dichlorophenyl trichlorosilane		8	UN 1766	Corrosive	II	1	1	Keep dry
Dichloropropane		3.3	UN 2047	Flammable Liquid	II	1,2	1,2	
Dichlorosilane		2.3	UN 2189	Poison Gas, Flammable Gas	-	1	5	Stow 'away from' living quarters
Dichlorotetrafluoroethane		2.2	UN 1958	Nonflammable Gas	-	1,2	1,2	
Dichromates, (inorganic), n.o.s.		5.1	UN 1464	Oxidizer	II	1,2	1,2	Stow 'away from' foodstuffs
Dicumyl peroxide, technical pure or in a mixture with inert solid		5.2	UN 2121	Organic Peroxide	II	1	5	
Dicyclohexyl perdicarbonate, maximum concentration 91% with water		5.2	UN 2153	Organic Peroxide	I	1	5	Maximum transport temperature 5 deg C
Dicyclohexyl perdicarbonate, technical pure		5.2	UN 2152	Organic Peroxide	I	1	5	Maximum transport temperature 5 deg C
Dicyclohexyl peroxydicarbonate. See Dicyclohexyl perdicarbonate								
Dicyclohexylamine		8	UN 2565	Corrosive	III	1	5	Keep dry
Dicyclopentadiene		3.3	UN 2048	Flammable Liquid	II	1,2	1,2	
Didymium nitrate		5.1	UN 1465	Oxidizer	III	1,2	1,2	
1,2-Diethoxyethane		3.3	UN 1153	Flammable Liquid	III	1,2	1,2	
Diethyl dichlorosilane		8	UN 1767	Corrosive	II	1	1	Keep dry. Separate longitudinally by an intervening compartment or hold from explosives
Diethyl ether		3.1	UN 1155	Flammable Liquid	I	1,2	5	Keep cool
Diethyl ketone		3.2	UN 1156	Flammable Liquid	II	1,2	1	
Diethyl-p-nitrosoaniline		4.2	--	Spontaneously Combustible	-	1,2	5	
Diethyl perdicarbonate, maximum concentration 27% in solution		5.2	UN 2175	Organic Peroxide	II	1	5	Maximum transport temperature -10 deg C
Diethyl peroxydicarbonate. See Diethyl perdicarbonate								
Diethyl sulphate		6.1	UN 1594	Poison	II	1	1	
Diethylaluminium chloride		4.2	UN 1101	Spontaneously Combustible	I	1	1	
Diethylamine		3.1	UN 1154	Flammable Liquid	II	1,2	5	Keep cool
N,N-Diethylaniline		6.1	UN 2432	St. Andrews Cross	III	1,2	1,2	
Diethylbenzene		3.3	UN 2049	Flammable Liquid	II	1,2	1,2	
Diethylenetriamine		8	UN 2079	Corrosive	II	1,2	1,2	Stow 'away from' acids, copper and copper alloys, and living quarters; 'separate from' nitric acid
Diethylmagnesium		4.2	UN 1367	Spontaneously Combustible	I	1	5	Prohibited on any ship carrying explosives
Diethylzinc		4.2	UN 1366	Spontaneously Combustible	I	1	5	Prohibited on any ship carrying explosives
1,1-Difluoroethane		2.1	UN 1030	Flammable Gas	-	1,2	1	Prohibited on any ship carrying explosives
1,1-Difluoroethylene		2.1	UN 1959	Flammable Gas	-	1,2	5	
Difluoromonochloroethane		2.1	UN 1031	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
Difluorophosphoric acid, anhydrous		8	UN 1768	Corrosive	II	1,2	1,2	Stow 'away from' living quarters
2,2-Dihydroperoxy propane, maximum concentration 25% with inert organic solid		5.2	UN 2178	Organic Peroxide	II	1	5	Stow 'away from' living quarters
Diisobutyl ketone		3.3	UN 1157	Flammable Liquid	III	1,2	1,2	
Diisobutylene, (isomeric compounds)		3.2	UN 2050	Flammable Liquid	II	1,2	1	
Diisooctyl acid phosphate		8	UN 1902	Corrosive	III	1,2	1,2	Glass carboys in hampers not permitted under deck
Diisopropyl ether		3.1	UN 1159	Flammable Liquid	II	1,2	5	Keep cool
Diisopropyl perdicarbonate, technical pure		5.2	UN 2133	Organic Peroxide	II	1	5	Maximum transport temperature -15 deg C
Diisopropyl perdicarbonate, maximum concentration 52% in solution		5.2	UN 2134	Organic Peroxide	II	1	5	Maximum transport temperature -10 deg C
Diisopropylamine		3.2	UN 1158	Flammable Liquid	II	1,2	1	
Diisopropylbenzene hydroperoxide, maximum concentration 72% in solution		5.2	UN 2171	Organic Peroxide	I	1	5	

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172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	(3) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	2,5-Dimethyl-2,5-bis-(2-ethylhexanoylperoxy) hexane, <i>technical pure</i>	5.2	UN 2157	Organic Peroxide	II	1	5	Maximum transport temperature 20 deg C
	2,5-Dimethyl-2,5-bis(benzoylperoxy) hexane, <i>technical pure</i>	5.2	UN 2172	Organic Peroxide	II	1	5	
	2,5-Dimethyl-2,5-bis(benzoylperoxy) hexane, <i>maximum concentra- tion 82% with inert solid</i>	5.2	UN 2173	Organic Peroxide	II	1	5	
	2,5-Dimethyl-2,5-bis(tert-butylperoxy) hexane, <i>technical pure</i>	5.2	UN 2145	Organic Peroxide	II	1	5	
	2,5-Dimethyl-2,5-bis(tert-butylperoxy) hexane, <i>maximum concentra- tion 52% with inert solid</i>	5.2	UN 2156	Organic Peroxide	II	1	5	
	2,5-Dimethyl-2,5-bis(tert-butylperoxy) hexyne-3, <i>technical pure</i>	5.2	UN 2158	Organic Peroxide	II	1	5	
	2,5-Dimethyl-2,5-bis(tert-butylperoxy) hexyne-3, <i>maximum concen- tration 52% with inert solid</i>	5.2	UN 2159	Organic Peroxide	II	1	5	
	2,5-Dimethyl-2,5-dihydroperoxy hexane, <i>maximum concentration 82% with water</i>	5.2	UN 2174	Organic Peroxide	I	1	5	
	3,5-Dimethyl-3,5-dihydroxydioxolane-1,2. See Acetyl acetone perox- ide, <i>maximum concentration 40% in solution</i>							
	Dimethyl carbonate	3.2	UN 1161	Flammable Liquid	II	1,2	1	
	Dimethyl ether	2.1	UN 1033	Flammable Gas	-	1,2	1	
	Dimethyl-p-nitrosoaniline	4.2	UN 1369	Spontaneously Combustible	II	1,2	5	Stow 'away from' foodstuffs
	Dimethyl sulphate	6.1	UN 1595	Poison	I	1	5	Keep cool
	Dimethyl sulphide	3.1	UN 1164	Flammable Liquid	I	1,3	5	Keep dry. Shade from radiant heat. Glass carboys prohibited on passenger vessels
	Dimethyl thiophosphoryl chloride	8	UN 2267	Corrosive	III	1,2	1	Stow 'away from' living quarters
	Dimethylamine, <i>anhydrous</i>	2.1	UN 1032	Flammable Gas	-	1,2	5	
	Dimethylamine, <i>solution</i>	3.2	UN 1160	Flammable Liquid	II	1,2	1	
	Dimethylaminoethyl methacrylate	6.1	UN 2522	Poison	II	1,2	1	
	N,N-Dimethylamine	6.1	UN 2253	Poison	II	1,3	1,3	Stow 'away from' sources of heat
	Dimethylbutane	3.1	UN 2457	Flammable Liquid	II	1,2	5	
	Dimethyl dichlorosilane	3.2	UN 1162	Flammable Liquid, Corrosive	I	1,2	1	
	Dimethylethanamine	3.3	UN 2051	Flammable Liquid	II	1,3	1,3	
	N,N-Dimethylformamide	6.1	UN 2265	St. Andrews Cross	III	1,3	1,3	Stow 'away from' sources of heat and halo- genated hydrocarbons
	2,5-Dimethylhexane-2,5-dihydroperoxide. See 2,5-Dimethyl-2,5-dihy- droxy-hexane							
	Dimethylhydrazine, <i>unsymmetrical</i>	3.2	UN 1163	Flammable Liquid	I	1,2	1	Stow 'separate from' corrosive liquids and oxidizers
	Dimethylmagnesium	4.2	UN 1368	Spontaneously Combustible	I	1	5	Prohibited on any ship carrying explosives
	2,2-Dimethylpropane	2.1	UN 2044	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Dimethylzinc	4.2	UN 1370	Spontaneously Combustible	I	1	5	Prohibited on any ship carrying explosives
	Dimyristyldiacyldicarbonate, <i>technical pure</i>	5.2	UN 2595	Organic Peroxide	II	1	5	Maximum transport temperature 20 deg C
	4,6-Dinitro-o-cresol	6.1	UN 1598	Poison	II	1,2	1,2	
	Dinitroanilines	6.1	UN 1596	Poison	II	1,2	1,2	
	Dinitrobenzenes (<i>o-, m-, p-</i>)	6.1	UN 1597	Poison	II	1,2	1,2	
	Dinitrophenol, <i>solution in water or flammable liquid</i>	6.1	UN 1599	Poison	II	1,2	5	Stow 'away from' heavy metals and their compounds. Segregation same as for flamm- able liquids if flash point below 61 deg C
	Dinitrophenol, <i>wetted with not less than 15% of water</i>	4.1	UN 1320	Flammable Solid, Poison	I	1,2	5	Stow 'away from' heavy metals and their compounds
	Dinitrophenolates, <i>wetted with not less than 15% of water</i>	4.1	UN 1321	Flammable Solid, Poison	I	1,2	5	Stow 'away from' heavy metals and their compounds
	Dinitroresorcinols, <i>wetted with not less than 33 1/3% of water</i>	4.1	UN 1322	Flammable Solid	I	1,2	5	Stow 'away from' heavy metals and their compounds
	Dinitrotoluenes, <i>liquid</i>	6.1	UN 1600	Poison, Flammable Liquid	II	1,2	1,2	Segregation same as for flammable liquids
	Dinitrotoluenes, <i>solid</i>	6.1	UN 2038	Poison	II	1,2	1,2	
	Dioxane	3.2	UN 1165	Flammable Liquid	II	1,2	1	
	Dioxolane	3.2	UN 1166	Flammable Liquid	II	1,2	1	
	Dipentene	3.3	UN 2092	Flammable Liquid	II	1,2	1,2	
	Diphenyl dichlorosilane	8	UN 1769	Corrosive	II	1	1	Keep dry
	Diphenylaminechloroarsine	6.1	UN 1698	Poison	I	1	5	
	Diphenylchloroarsine	6.1	UN 1699	Poison	I	1	5	
	Diphenylmethane diisocyanate (MDI)	9	UN 2459	None	III	1,3	1,3	Stow 'away from' foodstuffs
	Diphenylmethane bromide	8	UN 1770	Corrosive	II	1	5	
	Dipropylene triamine	8	UN 2269	Corrosive	III	1,2	1,2	
	Disinfectants, <i>corrosive, liquid</i>	8	UN 1903	Corrosive	II	1,2	1,2	
	Disinfectants, (poisonous), n.o.s.	6.1	UN 1601	Poison	I/II	1,2	1,2	Stow 'separate from' foodstuffs
		6.1	UN 1601	St. Andrews Cross	III	1,2	1,2	Stow 'separate from' foodstuffs
		9	UN 1601	None	III	1,2	1,2	Stow 'away from' foodstuffs
	Diisostearylperoxydicarbonate, <i>with 15% of stearyl alcohol</i>	5.2	UN 2592	Organic Peroxide	II	1	5	
	Disuccinic acid peroxide. See Succinic acid peroxide							
	Divinyl ether, <i>inhibited</i>	3.1	UN 1167	Flammable Liquid	II	1,3	5	Keep cool
	Dodecyl trichlorosilane	8	UN 1771	Corrosive	II			
	Dressing, leather. See Flammable liquid preparations, n.o.s.	3.2	UN 1168	Flammable Liquid	II	1,2	1	
	Driers, (paint or varnish, liquid), n.o.s.	3.3	UN 1168	Flammable Liquid	II	1,2	1,2	
	Driers, (paint or varnish, solid), n.o.s.	4.1	UN 1371	Flammable Solid	III	1,2	1,2	

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	(3) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Dye intermediates, (poisonous, liquid or solid), n.o.s.	6.1	UN 1602	Poison St. Andrews Cross	I/II III	1,2 1,2	1,2 1,2	
	Electrolyte, acid. See Battery fluid, acid	6.1	UN 1602					
	Electrolyte, alkaline. See Battery fluid, alkaline corrosive							
	Enamels. See Paints, etc.							
	Endrin, mixtures, dry or liquid	6.1	UN 2065	Poison St. Andrews Cross	I/II III	1,2 1,2	1,2 1,2	If flashpoint below 61 deg C segregation same as for flammable liquids
		6.1	UN 2065					If flashpoint below 61 deg C, segregation same as for flammable liquids
	Engine starting fluid, with flammable gas	2.1	UN 1960	Flammable Gas	--	1,2	5	Stow "away from" living quarters
	Epbromohydrin. See 1-Bromo-2,3-epoxypropane							
	Epichlorohydrin	6.1	UN 2023	Poison, Flammable Liquid (only if Flashpoint is below 23 deg C.)	II	1,2	1,2	Separation same as for flammable liquids
	Eradicators, paint or grease, liquid. To be classified and labeled according to the principle hazardous constituent		UN 1850		--	1,2	1	
	Ethane, compressed	2.1	UN 1035	Flammable Gas	--	1,2	5	
	Ethane, liquid	2.1	UN 1961	Flammable Gas	--	1,2	5	
	Ethanol	3.2	UN 1170	Flammable Liquid	II	1,2	1	
	Ethanamine, and solutions thereof	8	UN 2491	Corrosive	III	1,2	1,2	Stow "away from" copper, copper alloys, copper compounds and rubber products
	Ether. See Diethyl ether							
	2-Ethoxyethanol	3.3	UN 1171	Flammable Liquid	III	1,2	1,2	
	2-Ethoxyethyl acetate	3.3	UN 1172	Flammable Liquid	III	1,2	1,2	
	Ethyl-3,3-bis(tert-butylperoxy)butyrate, with at least 50% inert, Inorganic solid	5.2	UN 2598	Organic Peroxide	II	1	5	
	Ethyl-3,3-bis(tert-butylperoxy) butyrate, technical pure	5.2	UN 2184	Organic Peroxide	II	1	5	
	Ethyl-3,3-bis(tert-butylperoxy) butyrate, maximum concentration 77% in solution	5.2	UN 2185	Organic Peroxide	II	1	5	
	Ethyl acetate	3.2	UN 1173	Flammable Liquid	II	1,2	1	
	Ethyl acrylate, inhibited	3.2	UN 1917	Flammable Liquid	II	1,2	1	
	Ethyl alcohol. See Ethanol							
	Ethyl aldehyde. See Acetaldehyde							
	Ethyl aluminium dichloride	4.2	UN 1924	Spontaneously Combustible	I	1	1	
	Ethyl aluminium sesquichloride	4.2	UN 1925	Spontaneously Combustible	I	1	1	
	Ethyl borate	3.2	UN 1176	Flammable Liquid	II	1,2	1	
	Ethyl bromide	9	UN 1891	None	II	1,2	1,2	Stow "away from" foodstuffs and living quarters
	Ethyl bromoacetate	6.1	UN 1603	Poison	II	1	5	
	Ethyl butyl ether	3.2	UN 1179	Flammable Liquid	II	1,2	1	
	Ethyl butyrate	3.3	UN 1180	Flammable Liquid	II	1,2	1,2	
	Ethyl chloride	2.1	UN 1037	Flammable Gas	--	1,2	5	Stow "away from" living quarters
	Ethyl chloroacetate	3.3	UN 1181	Flammable Liquid	II	1,2	1,2	
	Ethyl chlorocarbonate. See Ethyl chloroformate							
	Ethyl chloroformate	3.2	UN 1182	Flammable Liquid, Poison, Corrosive	I	1,2	1	
	Ethyl crotonate	3.2	UN 1862	Flammable Liquid	II	1,2	1	
	Ethyl dichloroacaine	6.1	UN 1892	Poison	I	1	5	
	Ethyl ether. See Diethyl ether							
	Ethyl formate	3.1	UN 1190	Flammable Liquid	II	1,3	5	Keep cool
	Ethyl hexaldehyde	3.3	UN 1191	Flammable Liquid	III	1,2	1,2	
	Ethyl lactate	3.3	UN 1192	Flammable Liquid	III	1,2	1,2	
	Ethyl methyl ether	2.1	UN 1039	Flammable Gas	--	1,2	1	Stow "away from" living quarters
	Ethyl methyl ketone	3.2	UN 1193	Flammable Liquid	II	1,2	1	
	Ethyl methyl ketone peroxide(s), maximum concentration 60%	5.2	UN 2127	Organic Peroxide	I	1	5	
	Ethyl methyl ketone peroxide(s), maximum concentration 50%, containing not more than 10% available oxygen	5.2	UN 2550	Organic Peroxide	I	1	5	
	N-Ethyl-n-benzyllaniline	6.1	UN 2274	St. Andrews Cross	III	1,2	1,2	
	Ethylnitrite, solutions	3.1	UN 1194	Flammable Liquid	I	1,3	5	Keep cool
	Ethyl oxalate	6.1	UN 2525	St. Andrews Cross	III	1,2	1	
	Ethyl propionate	3.2	UN 1195	Flammable Liquid	II	1,2	1	
	Ethyl silicate. See Tetraethyl silicate							
	Ethylamine	2.1	UN 1036	Flammable Gas	--	1,2	5	
	N-Ethylaniline	6.1	UN 2272	St. Andrews Cross	III	1,2	1,2	Stow "away from" acids
	2-Ethylaniline	6.1	UN 2273	St. Andrews Cross	III	1,2	1,2	
	Ethylbenzene	3.3	UN 1175	Flammable Liquid	II	1,2	1,2	
	Ethylbutyl acetate	3.3	UN 1177	Flammable Liquid	III	1,2	1,2	
	2-Ethylbutyraldehyde	3.2	UN 1178	Flammable Liquid	II	1,2	1	
	Ethyldichlorosilane	3.2	UN 1183	Flammable Liquid	II	1,2	1	
	Ethylene chlorohydrin. See 2-Chloroethanol							
	Ethylene, compressed	2.1	UN 1962	Flammable Gas	--	1,2	5	Stow "away from" living quarters
	Ethylene dibromide	6.1	UN 1603	Poison	II	1,2	1,2	
	Ethylene dichloride	3.2	UN 1184	Flammable Liquid	II	1,2	1	

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172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	(3) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Ethylene glycol diethyl ether. See 1,2-Diethoxyethane Ethylene glycol monobutyl ether.	6.1	UN 2369	St. Andrews Cross	III	1,3	1,3	Stow 'away from' sources of heat. Segregation same as for flammable liquids
	Ethylene glycol monoethyl ether. See 2-Ethoxyethanol Ethylene glycol monoethyl ether acetate. See 2-Ethoxyethyl acetate							
	Ethylene glycol monomethyl ether	3.3	UN 1188	Flammable Liquid	III	1,2	1,2	
	Ethylene glycol monomethyl ether acetate	3.3	UN 1189	Flammable Liquid	III	1,2	1,2	
	Ethylene, liquid	2.1	UN 1038	Flammable Gas	-	1,2	5	Keep dry
	Ethylene oxide and carbon dioxide, mixtures containing not more than 10% carbon dioxide	2.1	UN 1041	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Ethylene oxide and carbon dioxide, mixtures containing not more than 17% of ethylene oxide	2.1	UN 1952	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Ethylene oxide, containing not more than 0.2% of nitrogen	2.1	UN 1040	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Ethylenediamine	8	UN 1604	Corrosive	II	1,2	1,2	Stow 'away from' oxidizers. Segregation same as for flammable liquids
	Ethylencimine, inhibited	3.2	UN 1185	Flammable Liquid, Poison	I	1,2	1	
	2-Ethylhexylamine	8	UN 2276	Corrosive	III	1,2	1,2	
	Ethylphenyldichlorosilane	8	UN 2435	Corrosive	II	1	1	
	Ethyltrichlorosilane	3.2	UN 1196	Flammable Liquid, Corrosive	II	1,2	1	
	Explosives, blasting, Type B	1.5 D	UN 0331	(Explosive (1.5D))	-	6	5	
	Explosives, blasting, Type E	1.5 D	UN 0332	(Explosive (1.5D))	-	6	5	
	Extracts, aromatic, liquid	3.2	UN 1169	Flammable Liquid	II	1,2	1	
	Extracts, flavouring, liquid	3.2	UN 1169	Flammable Liquid	II	1,2	1,2	
	Fabric, animal or vegetable, containing more than 5% of animal or vegetable oil	4.2	UN 1373	Flammable Liquid	II	1,2	1,2	
	Ferric arsenite	6.1	UN 1606	Poison	II	1,2	1,2	
	Ferric arsenite	6.1	UN 1607	Poison	II	1,2	1,2	
	Ferric chloride, anhydrous or solutions	8	UN 1773	Corrosive	III	1,2	1,2	
	Ferric nitrate	5.1	UN 1466	Oxidizer	III	1,2	1,2	
	Ferrocerium	4.1	UN 1323	Flammable Solid	II	1,2	1,2	
	Ferrosilicon, containing between 30% and 90% silicon	4.3	UN 1408	Dangerous When Wet, Poison	III	1,2	1,2	Stow in a well ventilated compartment
	Ferrous arsenate	6.1	UN 1608	Poison	II	1,2	1,2	
	Fertilizer ammoniating solution, containing free ammonia in excess of 35% ammonia	2.2	UN 1043	Nonflammable Gas	-	1,2	5	Stow 'away from' living quarters
	Fibres, animal or vegetable, burn, wet or damp	4.2	UN 1372	Spontaneously Combustible	III	1,2	1,2	
	Fibres, animal or vegetable, containing more than 5% of animal or vegetable oil	4.2	UN 1373	Spontaneously Combustible	III	1,2	1,2	
	Fibres, vegetable, dry	4.2	-	None	-	1,2	1,2	
	Filters, liquid. See Paints, etc.	4.1	-	None	-	1,2	1,2	Stow 'away from' animal or vegetable oils
	Film, from which gelatin has been removed. See Celluloid, scrap							
	Film, motion picture, nitrocellulose base, exposed or unexposed, developed or undeveloped	4.1	UN 1324	Flammable Solid	III	1,2	1,2	
	Film, motion picture, nitrocellulose base, old film	4.1	UN 1324	Flammable Solid	III	1	5	
	Fire extinguisher charges, corrosive liquid	8	UN 1774	Corrosive	II	1,2	1,2	Stow 'away from' flammable substances
	Fire extinguishers, containing compressed or liquefied gas	2.2	UN 1044	Nonflammable Gas	-	1,2	1,2	
	Fireworks, Type D	1.4 G	UN 0336	Explosive (1.4G)	-	1,3	1,3	
	1.4 S	UN 0337	None. Package to be marked '1.4 S'	-	1,3	1,3		
	Fishmeal or fishscrap, antioxidant treated. Unrestricted moisture content	4.2	UN 2216	Spontaneously Combustible	II/III	1,2	1,2	Double strip stowage recommended. Provide good surface and through ventilation
	Fishmeal or fishscrap, antioxidant treated. Moisture content between 5% and 11% by weight. Fat content not more than 18% by weight	9	UN 2216	None	III	1,2	1,2	
	Fishmeal or fishscrap, antioxidant treated. Moisture content greater than 6% but not exceeding 12% by weight. Fat content exceeding 18% by weight	4.2	UN 2216	None. Package to be marked 'Class 4.2'	III	1,2	1,2	
	Fishmeal or fishscrap, not antioxidant treated. Unrestricted moisture content	4.2	UN 1374	Spontaneously Combustible	II/III	1,2	1,2	Double strip stowage recommended. Provide good surface and through ventilation
	Fishmeal or fishscrap, not antioxidant treated. Moisture content greater than 6% but not exceeding 12% by weight. Fat content not exceeding 12% by weight	4.2	UN 1374	None. Package to be marked 'Class 4.2'	III	1,2	1,2	
	Fishmeal or fishscrap, not antioxidant treated. Moisture content greater than 6% but not exceeding 12% by weight. Fat content exceeding 12% but not exceeding 15% by weight	4.2	UN 1374	None. Package to be marked 'Class 4.2'	III	1,2	1,2	
	Flammable liquid preparation, n.o.s.	3.2	UN 1142	Flammable Liquid	II	1,2	1	
		3.3	UN 1142	Flammable Liquid	II	1,2	1,2	
	Flammable liquids, (non-toxic), n.o.s.	3.2	UN 1993	Flammable Liquid	II	1,2	1	
		3.3	UN 1993	Flammable Liquid	II	1,2	1,2	
	Flammable liquids, (toxic), n.o.s.	3.2	UN 1992	Flammable Liquid, Poison	II	1,2	1	
		3.3	UN 1992	Flammable Liquid, Poison	II	1,2	1,2	
	Flammable solids, n.o.s.	4.1	UN 1325	Flammable Solid	II	1,2	1,2	

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Flax, dry. See Fibres, vegetable, dry	8	UN 1775	Corrosive	I	1,2	1,2	
	Fluoboric acid							
	Fluoric acid. See Hydrofluoric acid, solution	2.3	UN 1045	Poison Gas, Oxidizer	-	1	5	Stow 'away from' foodstuffs, organic materials, and living quarters
	Fluorine							
	Fluorophosphoric acid, anhydrous	8	UN 1776	Corrosive	II	1,2	1,2	
	Fluorosulphonic acid	8	UN 1777	Corrosive	I	1	5	Keep dry. Stow 'away from' fluorides
	Fluocitric acid	8	UN 1778	Corrosive	II	1,2	1,2	
	Formaldehyde, in solution	3.3	UN 1198	Flammable Liquid	II	1,2	1,2	Stow 'away from' foodstuffs
	Formaldehyde, solution; flashpoint above 61 degrees C	9	UN 2209	None	III	1,2	1,2	Stow 'away from' foodstuffs
	Formalin. See Formaldehyde							
	Formic acid	8	UN 1779	Corrosive	II	1,2	1,2	Glass carboy in hampers prohibited
	Fuel, aviation, turbine engine	3.2	UN 1863	Flammable Liquid	II	1,2	1	
	Fumaryl chloride	8	UN 1780	Corrosive	II	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Fungicides, (poisonous), n.o.s.	6.1	UN 1609	Poison	I/II	1,2	1,2	
		6.1	UN 1609	St. Andrews Cross	III	1,2	1,2	Stow 'separate from' foodstuffs.
		9	UN 1609	None	III	1,2	1,2	Stow 'separate from' foodstuffs.
	Furfural							Stow 'away from' foodstuffs.
	Fuse, detonating, mild effect, metal clad	1.3	UN 1199	Flammable Liquid	II	1,2	1,2	
	Fuse, igniter, tubular, metal clad	1.4 D	UN 0104	Explosive (1.4D)	-	1,3	1,3	
	Fuse, safety	1.4 G	UN 0103	Explosive (1.4G)	-	1,3	1,3	
	Fusel oil	1.4 S	UN 0103	None. Package to be marked '1.4 S'	-	1,3	1,3	
	Fuzes, detonating	3.2	UN 1201	Flammable Liquid	II	1,2	1	
	Fuzes, igniting	1.4 S	UN 0367	None. Package to be marked '1.4S'	-	1,3	1,3	
	Fuzes, detonating	1.4 B	UN 0257	Explosive (1.4B)	-	1,3	1,3	
	Fuzes, igniting	1.4 S	UN 0368	None. Package to be marked '1.4S'	-	1,3	1,3	
	Gas cartridges	2.1	UN 2037	Flammable Gas	-			
	Gas drips, hydrocarbon	3.2	UN 1864	Flammable Liquid	II	1,2	1	
	Gas oil	3.3	UN 1202	Flammable Liquid	II	1,2	1,2	
	Gasoline	3.1	UN 1203	Flammable Liquid	II	1,2	5	
	Germane	2.3	UN 2192	Poison Gas, Flammable Gas	-	1	5	Stow 'away from' living quarters
	Germicides, (poisonous), n.o.s.	6.1	(UN 2583)	Poison	II	1,2	1,2	
		6.1	(UN 2583)	St. Andrews Cross	III	1,2	1,2	Stow 'separate from' foodstuffs.
		9	(UN 2583)	None	III	1,2	1,2	Stow 'separate from' foodstuffs.
			(UN 2583)				Stow 'away from' foodstuffs.	
	Glyceryl trinitrate, solution up to 1% in alcohol	3.2	UN 1204	Flammable Liquid	II	1,2	1	
	Grenades, practice, hand or rifle	1.4 S	UN 0110	None. Package to be marked '1.4 S'	-	1,3	1,3	
	Guaridine nitrate	9	UN 1467	None	III	1,2	1,2	Stow 'separate from' nitro compounds, chlorates or acids
	Gutta percha, solution	3.3	UN 1205	Flammable Liquid	II	1,2	1,2	
	Hafnium metal powder, dry	4.2	UN 2545	Spontaneously Combustible	II	1	5	
	Hafnium metal powder, wet, with not less than 25% water (a visible excess of water must be present)	4.1	UN 1326	Flammable Solid	II	1,2	5	
	Halogenated irritating liquids, n.o.s.	6.1	UN 1610	Poison	I/II	1	5	
		6.1	UN 1610	St. Andrews Cross	III	1	5	
	Hay	4.1	UN 1327	None	III	1,2	1,2	Stow 'away from' animal or vegetable oils
	Helium, compressed	2.2	UN 1046	Nonflammable Gas	-	1,2	1,2	
	Helium, liquid	2.2	UN 2041	Nonflammable Gas	-	1,2	1,2	
	Hemp, dry. See Fibres, vegetable, dry							
	Hepiane	3.2	UN 1206	Flammable Liquid	II	1,2	1	
	Hexachlorobutadiene	6.1	UN 2279	St. Andrews Cross	III	1,2	1,2	
	Hexadecyl trichlorosilane	8	UN 1781	Corrosive	II	1	1	Keep dry
	Hexaethyl tetraphosphate	6.1	UN 1611	Poison	I/B	1,2	5	
	Hexaethyl tetraphosphate and compressed gas mixture	6.1	UN 1611	St. Andrews Cross	III	1,2	5	Shade from radiant heat. Segregation same as nonflammable gas.
		6.1	UN 1612	Nonflammable Compressed Gas	III	1	5	Shade from radiant heat. Segregation same as for nonflammable gas
			UN 1612	St. Andrews Cross, Non-flammable Compressed Gas	III	1	5	
	Hexafluoroacetone	2.3	UN 2420	Poison Gas	-	1	5	Stow 'away from' living quarters
	Hexafluoroacetone hydrate	6.1	UN 2552	Poison	II	1,2	1	
	Hexafluorophosphoric acid	8	UN 1782	Corrosive	II	1,2	1,2	
	Hexafluoropropylene	2.2	UN 1838	Nonflammable Gas	-	1,2	1,2	
	Hexaldehyde	3.3	UN 1207	Flammable Liquid	II	1,2	1,2	
	3,3,6,6,9,9-Hexamethyl-1,2,4,5-tetraoxonane, technical pure	5.2	UN 2165	Organic Peroxide	I	1	5	
	3,3,6,6,9,9-Hexamethyl-1,2,4,5-tetraoxane, maximum concentration 52% with inert solid	5.2	UN 2166	Organic Peroxide	II	1	5	

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	(3) IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	3,3,6,6,9,9-Hexamethyl-1,2,4,5-tetraoxonane, maximum concentration 32% in solution	5.2	UN 2167	Organic Peroxide	II	1	5	
	Hexamethylenediamine, solid	8	UN 2280	Corrosive	III	1,2	1,2	Keep cool
	Hexamethylenediamine, solution	8	UN 1783	Corrosive, Poison	II	1,2	1,2	
	Hexamine	4.1	UN 1328	Flammable Solid	III	1,2	1,2	
	Hexane	3.1	UN 1208	Flammable Liquid	II	1,2	5	
	Hexyl trichlorosilane	8	UN 1784	Corrosive	II	1	1	Keep dry
	Hydrazine, anhydrous and solutions containing less than 36% water, by weight	8	UN 2029	Corrosive, Poison	I	1	5	
	Hydrazine, solutions containing 36% or more water, by weight	8	UN 2030	Corrosive, Poison	II	1,2	5	Under deck not permitted if containing less than 64% water by weight. Stow 'away from' nitric acid and perchloric acids exceeding 50% acid by weight
	Hydrides, (metal), n.o.s.	4.3	UN 1409	Dangerous When Wet	I	1,2	5	
	Hydrochloric acid	8	UN 1787	Corrosive	II	1	1	Glass carboys prohibited on passenger vessels
	Hydrobromic acid	8	UN 1788	Corrosive	II	1	1	Glass carboys prohibited on passenger vessels. Stow 'away from' fluorides
	Hydrocarbon gases (and mixtures of such gases, compressed), n.o.s.	2.1	UN 1964	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Hydrocarbon gases (and mixtures of such gases, liquefied), n.o.s.	2.1	UN 1965	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Hydrochloric acid	8	UN 1789	Corrosive	II	1	1	Glass carboys prohibited on passenger vessels. Stow 'away from' fluorides
	Hydrocyanic acid, anhydrous. See Hydrogen cyanide							
	Hydrocyanic acid, aqueous solution of not more than 20% of hydrogen cyanide	6.1	UN 1613	Poison	I	1	5	
	Hydrofluoric acid, solution	8	UN 1790	Corrosive	I/II	1	5	Keep cool
	Hydrofluoric and sulphuric acid, mixtures. See Acid mixtures, hydrofluoric and sulphuric							
	Hydrofluosilicic acid. See Fluosilicic acid							
	Hydrogen and methane, mixtures	2.1	UN 2034	Flammable Gas	-	1,2	5	Stow 'away from' living quarters
	Hydrogen bromide, anhydrous	2.3	UN 1048	Poison Gas, Corrosive	-	1	5	Stow 'away from' foodstuffs and living quarters
	Hydrogen chloride, anhydrous	2.3	UN 1050	Poison Gas, Corrosive	-	1	5	Stow 'away from' foodstuffs and living quarters
	Hydrogen, compressed	2.1	UN 1049	Flammable Gas	-	1,2	5	Stow 'separate from' chlorine, 'away from' living quarters
	Hydrogen cyanide, anhydrous, stabilized	2.3	UN 1051	Poison Gas, Flammable Gas	-	1	5	Stow 'away from' foodstuffs and living quarters
	Hydrogen cyanide, anhydrous, stabilized, absorbed in a porous inert material	6.1	UN 1614	Poison	I	1	5	Shade from radiant heat
	Hydrogen fluoride, anhydrous	2.3	UN 1052	Poison Gas, Corrosive	-	1	5	Stow 'away from' foodstuffs and living quarters
	Hydrogen iodide, anhydrous	2.3	UN 2197	Poison Gas, Corrosive	-	1	5	Stow 'away from' foodstuffs and living quarters
	Hydrogen iodide, solution. See Hydroiodic acid							
	Hydrogen peroxide, concentrations of 8% up to 40% peroxide	5.1	UN 2014	Oxidizer	II	1,2	1	Shade from radiant heat. Stow 'away from' powdered metals and 'separate from' permanganates
	Hydrogen peroxide, concentrations of over 40% up to 60% peroxide	5.1	UN 2014	Oxidizer, Corrosive	II	1	5	Shade from radiant heat. Stow 'away from' powdered metals and 'separate from' permanganates
	Hydrogen peroxide, stabilized, concentrations of over 60% peroxide	5.1	UN 2015	Oxidizer, Corrosive	I	1	5	Permitted only under conditions approved by the Department
	Hydrogen selenide	2.3	UN 2202	Poison Gas, Flammable Gas	-	1	5	Stow 'away from' living quarters
	Hydrogen sulphide	2.1	UN 1053	Flammable Gas, Poison Gas	-	1	5	Stow 'away from' foodstuffs and living quarters
	Hydrosilicofluoric acid. See Fluosilicic acid							
	1-Hydroxy-1'-hydroperoxy dicyclohexyl peroxide, and mixtures with bis(1-hydroxy cyclohexyl) peroxide, in a concentration of more than 90% with less than 10% water	5.2	UN 2117	Organic Peroxide	I	1	5	
	1-Hydroxy-1'-hydroperoxy dicyclohexyl peroxide, and mixtures with bis(1-hydroxy cyclohexyl) peroxide, in a concentration of 90% or less with at least 10% water	5.2	UN 2119	Organic Peroxide	I	1	5	
	1-Hydroxy-1'-hydroperoxy dicyclohexyl peroxide, and mixtures with bis(1-hydroxy cyclohexyl) peroxide, maximum concentration 72% as a paste or in solution	5.2	UN 2118	Organic Peroxide	I	1	5	
	Hypochlorite, solutions containing more than 5% available chlorine	8	UN 1791	Corrosive	II/III	1,2	1	Glass carboys in hampers prohibited under deck
	Igniters	1.4 G	UN 0325	Explosive (1.4G)	-			
	Inflammable gas for lighters. See Lighters, for cigars and cigarettes, containing flammable gas							
	Inflammable liquid preparations, n.o.s. See Flammable liquid preparations, n.o.s.							
	Inflammable liquids, (non-toxic), n.o.s. See Flammable liquids, (non-toxic), n.o.s.							
	Inflammable liquids, (toxic), n.o.s. See Flammable liquids, (toxic), n.o.s.							
	Inflammable solids, n.o.s. See Flammable solids, n.o.s.							
	Ink, printers	3.2	UN 1210	Flammable Liquid	II	1,2	1	
		3.3	UN 1210	Flammable Liquid	II	1,2	1,2	
	Insecticide gases, (non-toxic), n.o.s.	2.1	UN 1968	Flammable Gas	-	1,2	1	
		2.2	UN 1968	Nonflammable Gas	-	1,3	1,3	

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passen- ger vessel	(c) Other requirements
	Insecticide gases, (toxic), n.o.s. Insecticides, n.o.s.	2.3 6.1 6.1 9	UN 1967 UN 1615 UN 1615 None	Poison Gas Poison St. Andrews Cross None	-- I/II III	1 1.2 1.2	5 1.2 1.2	Shade from radiant heat Stow 'separate from' foodstuffs. Stow 'separate from' foodstuffs. Stow 'away from' foodstuffs
	Iodine monochloride Iron carbonyl	8 3.1	UN 1792 UN 1994	Corrosive Flammable Liquid, Poison	II I	1 1	5 5	Keep dry Shade from radiant heat
	Iron chloride. See Ferric chloride Iron oxide, spent	4.2	UN 1376	Spontaneously Combustible	III		1.2 5	
	Iron pentacarbonyl. See Iron carbonyl Iron sesquichloride. See Ferric chloride Iron sponge, spent. See Iron oxide, spent							
	Iron swarf, e.g., borings, cuttings, drillings, filings, shavings, turnings	4.2	UN 2793	None	--	1.2	1.2	
	Isobutane or Isobutene mixtures	2.1	UN 1969	Flammable Gas	--	1.2	1	
	Isobutanol	3.3	UN 1212	Flammable Liquid	II	1.2	1.2	
	Isobutyl acetate	3.2	UN 1213	Flammable Liquid	II	1.2	1	
	Isobutyl alcohol. See Isobutanol Isobutyl aldehyde. See Isobutyraldehyde							
	Isobutyl methyl ketone peroxide, maximum concentration 62% in solution	5.2	UN 2126	Organic Peroxide	I	1	5	
	Isobutylamine	3.2	UN 1214	Flammable Liquid	II	1.2	1	
	Isobutylene	2.1	UN 1055	Flammable Gas	--	1.2	1	
	Isobutyraldehyde	3.1	UN 2045	Flammable Liquid	II	1.2	5	Keep cool
	Isobutyl peroxide, maximum concentration 52% in solution	5.2	UN 2182	Organic Peroxide	II	1	5	Maximum transport temperature -20 deg C
	Isocyanates (and solutions)	3.1	UN 2474	Flammable Liquid, Poison	II	1	5	Stow 'away from' living quarters and sources of heat
	Isocyanates (with a boiling point below 100 degrees C and a flashpoint of 23 degrees C or above, and their solutions), n.o.s.	6.1	UN 2204	Poison, Flammable Liquid (only if flashpoint of the substance or solution is below 61 deg C.)	II	1.2	1.2	Shade from radiant heat. Stow 'away from' sources of heat. Segregation same as for flammable liquids if flashpoint below 61 deg C
	Isocyanates (with a boiling point of 300 degrees C and above and their solutions), n.o.s.	9	UN 2207	None	III	1.2	1.2	Stow 'away from' foodstuffs and sources of heat
	Isononanoyl peroxide, technical pure or in solution	5.2	UN 2128	Organic Peroxide	II	1	5	Maximum transport temperature 0 deg C
	Isooctene	3.1	UN 1216	Flammable Liquid	II	1.2	5	
	Isopentane	3.1	UN 1265	Flammable Liquid	I	1.2	5	
	Isophorone diisocyanate	6.1	UN 2290	Poison	II	1.2	1	
	Isophoronediamine	8	UN 2289	Corrosive	III	1.2	1.2	Glass carboys prohibited on passenger vessels
	Isoprene, inhibited	3.1	UN 1218	Flammable Liquid	I	1.2	5	Keep cool
	Isopropanol	3.2	UN 1219	Flammable Liquid	II	1.2	1	
	Isopropyl acetate	3.2	UN 1220	Flammable Liquid	II	1.2	1	
	Isopropyl acid phosphate	8	UN 1793	Corrosive	III	1.2	1.2	Glass carboys in hampers prohibited under deck
	Isopropyl alcohol. See Isopropanol							
	Isopropyl nitrate	3.2	UN 1222	Flammable Liquid	II	1.2	1	
	Isopropyl peroxydicarbonate. See Diisopropyl perdicarbonate							
	Isopropylamine	3.1	UN 1221	Flammable Liquid	I	1.2	5	
	Isopropylbenzene	3.3	UN 1918	Flammable Liquid	II	1.2	1.2	Keep cool
	Jute, dry. See Fibres, vegetable, dry							
	Kapok, dry. See Fibres, vegetable, dry							
	Kerosene	3.3	UN 1223	Flammable Liquid	II	1.2	1.2	
	Ketones, (liquid, non-toxic), n.o.s.	3.2	UN 1224	Flammable Liquid	II	1.2	1	
	Ketones, (liquid, toxic), n.o.s.	3.2	UN 1224	Flammable Liquid, Poison	II	1.2	1	
		3.3	UN 1224	Flammable Liquid, Poison	II	1.2	1.2	
	Krypton, compressed	2.2	UN 1056	Nonflammable Gas	--	1.2	1.2	
	Krypton, liquid	2.2	UN 2042	Nonflammable Gas	--	1	5	
	Lacquer base. See Paints, etc.							
	Lacquer chips. See Paints, etc.							
	Lacquers. See Paints, etc.							
	Lauroyl peroxide, technical pure	5.2	UN 2124	Organic Peroxide	II	1	5	
	Lead acetate	6.1	UN 1616	St. Andrews Cross	III	1.2	1.2	
	Lead arsenites	6.1	UN 1617	Poison	II	1.2	1.2	
	Lead arsenites	6.1	UN 1618	Poison	II	1.2	1.2	
	Lead compounds, (water soluble), n.o.s.	6.1	UN 2291	St. Andrews Cross	III	1.2	1.2	
	Lead cyanide	6.1	UN 1620	Poison	II	1.2	1.2	
	Lead dioxide	5.1	UN 1872	Oxidizer	III	1.2	1.2	Stow 'away from' acids Stow 'away from' foodstuffs
	Lead dross. See Lead sulphate, containing more than 3% free acid							
	Lead nitrate	5.1	UN 1469	Oxidizer, Poison	II	1.2	1.2	Stow 'away from' foodstuffs
	Lead perchlorate	5.1	UN 1470	Oxidizer, Poison	II	1.2	1.2	Stow 'away from' powdered metals and foodstuffs
	Lead peroxide. See Lead dioxide							

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172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Lead sulphate, containing more than 3% free acid	8	UN 1794	Corrosive None	II	1,2	1,2	
	Life-rafts, inflatable	9	-		-	1,2	1,2	
	Lighter fuel, cigar and cigarette	3.2	UN 1226	Flammable Liquid	II	1,2	1	
	Lighters for cigars and cigarettes, etc., containing fuel	3.2	UN 1226	Flammable Liquid	II	1,2	1	
	Lighters for cigars and cigarettes, etc., containing flammable gas	2.1	UN 1057	Flammable Gas	-	1	1	
	Lighters, fuse	1.4 S	UN 0131	None. Package to be marked '1.4 S'	-	1,3	1,3	
	Liquefied non-flammable gases charged with nitrogen, carbon dioxide or air	2.2	UN 1058	Nonflammable Gas	-	1,2	1,2	
	Lithium alkyls	4.2	UN 2445	Spontaneously Combustible	I	1	1	
	Lithium aluminium hydride	4.3	UN 1410	Dangerous When Wet	I	1,2	5	
	Lithium aluminium hydride, etherated	4.3	UN 1411	Dangerous When Wet, Flammable Liquid	I	1	5	
	Lithium amide	4.3	UN 1412	Dangerous When Wet	II	1,2	5	
	Lithium borohydride	4.3	UN 1413	Dangerous When Wet	I	1,2	5	
	Lithium hydride	4.3	UN 1414	Dangerous When Wet	I	1,2	5	
	Lithium hypochlorite, dry, including mixtures containing more than 39% available chlorine (8.8% available oxygen)	5.1	UN 1471	Oxidizer	II	1,2	1,2	
	Lithium, (metal)	4.3	UN 1415	Dangerous When Wet	II	1,2	5	
	Lithium peroxide	5.1	UN 1472	Oxidizer	II	1,2	1,2	
	Lithium silicon	4.3	UN 1417	Dangerous When Wet	II	1,2	1,2	
	London purple	6.1	UN 1621	Poison	II	1,2	1,2	
	Lye. See Sodium hydroxide							
	Magnesium alloy, containing more than 50% magnesium, pellets, turnings or ribbon	4.1	UN 1869	Flammable Solid	III	1,2	1,2	
	Magnesium alloy, containing more than 50% magnesium, powder, non-pyrophoric	4.3	UN 1418	Dangerous When Wet	II	1,2	1,2	
	Magnesium aluminium phosphide	4.3	UN 1419	Dangerous When Wet	I	1	5	
	Magnesium arsenate	6.1	UN 1622	Poison	II	1,2	1,2	
	Magnesium bromate	5.1	UN 1473	Oxidizer	II	1,2	1,2	
	Magnesium diamide	4.2	UN 2004	Spontaneously Combustible	II	1	1	
	Magnesium diphenyl	4.2	UN 2005	Spontaneously Combustible	I	1	1	
	Magnesium hydride	4.3	UN 2010	Dangerous When Wet	I	1,2	5	
	Magnesium nitrate	5.1	UN 1474	Oxidizer	III	1,2	1,2	
	Magnesium, pellets, turnings or ribbon	4.1	UN 1869	Flammable Solid	III	1,2	1,2	
	Magnesium perchlorate	5.1	UN 1475	Oxidizer	II	1,2	1,2	
	Magnesium peroxide	5.1	UN 1476	Oxidizer	II	1,2	1,2	
	Magnesium phosphide	4.3	UN 2011	Dangerous When Wet, Poison	I	1	5	
	Magnesium, powder, non-pyrophoric	4.3	UN 1418	Dangerous When Wet	II	1,2	1,2	
	Maleic anhydride	8	UN 2215	None	III	1,2	1,2	
	Maneb, or maneb preparation(s) containing 60% or more maneb	4.2	UN 2210	Spontaneously Combustible	III	1,2	1,2	
	Manganese ethylene-bis-dithiocarbamate. See Maneb							
	Manganese resinate	4.1	UN 1330	Flammable Solid	III	1,2	1,2	
	Matches, fuse	4.1	UN 2254	Flammable Solid	III	1,2	1,2	
	Matches, safety	9	UN 1944	None	III	1,2	1,2	
	Matches, strike anywhere	4.1	UN 1331	Flammable Solid	III	1,2	1	
	Matches, wax 'verba'	4.1	UN 1945	Flammable Solid	III	1,2	1	
N	Medicines, n.o.s. to be classified and labeled according to the principle hazardous constituent	-	UN 1851	-	-			
	MEKP. See Ethyl methyl ketone peroxide							
	p-Menthane hydroperoxide, technical pure	5.2	UN 2125	Organic Peroxide	I	1	5	
	Mercaptans and mercaptan mixtures, (liquid), n.o.s.	3.1	UN 1228	Flammable Liquid	II	1,2	5	
	Mercuric acetate. See Mercury acetate							
	Mercuric arsenite	6.1	UN 1623	Poison	II	1,2	1,2	
	Mercuric bromide. See Mercury bromides							
	Mercuric chloride	6.1	UN 1624	Poison	II	1,2	1,2	
	Mercuric cyanide. See Mercury cyanide							
	Mercuric nitrate	6.1	UN 1625	Poison	II	1,2	1,2	
	Mercuric oxycyanide. See Mercury oxycyanide							
	Mercuric potassium cyanide	6.1	UN 1626	Poison	I	1,2	1,2	
	Mercuric sulphate	6.1	UN 1645	Poison	II	1,2	1,2	
	Mercurol. See Mercury nuclease							
	Mercurous acetate. See Mercury acetate							
	Mercurous bromide. See Mercury bromides							
	Mercurous nitrate. See Mercury acetate							
	Mercurous sulphate	6.1	UN 1628	Poison	II	1,2	1,2	
	Mercury acetate	6.1	UN 1629	Poison	II	1,2	1,2	

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Mercury ammonium chloride	6.1	UN 1630	Poison	II	1,2	1,2	
	Mercury benzoate	6.1	UN 1631	Poison	II	1,2	1,2	
	Mercury bisulfate	6.1	UN 1633	Poison	II	1,2	1,2	
	Mercury bromides	6.1	UN 1634	Poison	II	1,2	1,2	
	Mercury compounds, (inorganic), n.o.s.	6.1	UN 2024	Poison	I/II	1,2	1,2	
	Mercury compounds, (organic), n.o.s.	6.1	UN 2024	St. Andrews Cross	III	1,2	1,2	
	Mercury cyanide	6.1	UN 2025	Poison	I/II	1,2	1,2	
	Mercury gluconate	6.1	UN 2025	St. Andrews Cross	III	1,2	1,2	
	Mercury iodide	6.1	UN 1636	Poison	II	1,2	1,2	
	Mercury nucleate	6.1	UN 1637	Poison	II	1,2	1,2	
	Mercury oleate	6.1	UN 1638	Poison	II	1,2	1,2	
	Mercury oxide	6.1	UN 1639	Poison	II	1,2	1,2	
	Mercury oxycyanide	6.1	UN 1640	Poison	II	1,2	1,2	
	Mercury potassium iodide	6.1	UN 1641	Poison	II	1,2	1,2	
	Mercury salicylate	6.1	UN 1642	Poison	II	1,2	1,2	
	Mercury thiocyanate	6.1	UN 1643	Poison	II	1,2	1,2	
	Mesityl oxide	3.3	UN 1644	Poison	II	1,2	1,2	
	Metal alkyls, n.o.s.	4.2	UN 1229	Flammable Liquid	II	1,2	1,2	
	Methacrylic acid, inhibited	4.1	UN 2003	Spontaneously Combustible	I	1	3	Shade from radiant heat. Slow separate from flammable liquids or gases, oxidizers or organic peroxides
	Methane or natural gases with a high methane content, compressed liquid	2.1	UN 1332	Flammable Solid	III	1,2	1,2	
	Methane or natural gases with a high methane content, refrigerated liquid	2.1	UN 2531	Corrosive	II	1	1	Keep cool. Glass carboys prohibited on passenger vessels
	Methanol	3.2	UN 1971	Flammable Gas	-	1,2	5	
			UN 1972	Flammable Gas	-	1	5	Stow away from living quarters
			UN 1230	Flammable Liquid, Poison	II	1,2	1	Stow away from living quarters
	2-Methyl-1,3-butadiene. See Isoprene							
	2-Methyl-5-ethylpyridine	6.1	UN 2300	St. Andrews Cross	III	1,2	1,2	
	Methyl acetate	3.2	UN 1231	Flammable Liquid	II	1,2	1	
	Methyl acetone	3.2	UN 1232	Flammable Liquid	II	1,2	1	
	Methyl acetylene, mixed with 15% to 20% propadiene	2.1	UN 1060	Flammable Gas	-	1,2	1	
	beta-Methyl sorolein. See Crotonaldehyde, inhibited							
	Methyl acrylate, inhibited	3.2	UN 1919	Flammable Liquid	II	1,2	1	
	Methyl alcohol. See Methanol							
	Methyl aluminum sesquibromide	4.2	UN 1926	Spontaneously Combustible	I	1	1	
	Methyl aluminium sesquichloride	4.2	UN 1927	Spontaneously Combustible	I	1	1	
	Methyl amyl ketone. See Amyl methyl ketone							
	Methyl bromide	2.3	UN 1062	Poison Gas	-	1	5	
	Methyl bromide and chloropicrin, mixtures. See Chloropicrin and methyl bromide, mixtures							
	Methyl bromide and ethylene dibromide, liquid mixtures	6.1	UN 1647	Poison	I	1	1	
	Methyl butyrate	3.2	UN 1237	Flammable Liquid	II	1,2	1	
	Methyl chloride	2.1	UN 1063	Flammable Gas	-	1,2	5	
	Methyl chloride and chloropicrin, mixtures. See Chloropicrin and methyl chloride, mixtures							
	Methyl chloride and methylene chloride, mixtures	2.1	UN 1912	Flammable Gas	-	1,2	5	
	Methyl chloroformate. See Methyl chloroformate							
	Methyl chloroformate	3.2	UN 1238	Flammable Liquid, Poison, Corrosive	I	1,2	1	
	Methyl cyanide	6.1	UN 1648	Poison, Flammable Liquid	II	1	5	Shade from radiant heat. Segregation as for flammable liquids
	Methyl cyclohexane	3.2	UN 2296	Flammable Liquid	II	1,2	1	
	Methyl cyclopentane	3.1	UN 2298	Flammable Liquid	II	1,2	5	
	Methyl dichloroacetate	6.1	UN 2299	St. Andrews Cross	III	1,2	1,2	
	Methyl ethyl ether. See Ethyl methyl ether							
	Methyl ethyl ketone peroxide(s). See Ethyl methyl ketone peroxide							
	Methyl ethyl ketone. See Ethyl methyl ketone							
	Methyl formate	3.1	UN 1243	Flammable Liquid	I	1,3	5	Keep cool
	Methyl isobutyl carbinol	3.3	UN 2053	Flammable Liquid	III	1,2	1,2	
	Methyl isobutyl ketone	3.2	UN 1245	Flammable Liquid	II	1,2	1	
	Methyl isocyanate and solutions	3.1	UN 2480	Flammable Liquid, Poison	I	1	5	
	Methyl isopropenyl ketone, inhibited	3.2	UN 1246	Flammable Liquid	II	1,2	1	
	Methyl magnesium bromide, in ethyl ether	4.2	UN 1928	Spontaneously Combustible	I	1	5	
	Methyl methacrylate, monomer, inhibited	3.2	UN 1247	Flammable Liquid	II	1,2	3	
	Methyl proponate	3.2	UN 1248	Flammable Liquid	II	1,2	1	
	Methyl propyl ketone	3.2	UN 1249	Flammable Liquid	II	1,2	1	
	Methyl sulphide. See Dimethyl sulfide							
	Methyl trichloroacetate	6.1	UN 2533	St. Andrews Cross	III	1,2	1	

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- senger vessel	(c) Other requirements
	Methyl vinyl ketone	3.2	UN 1251	Flammable Liquid	II	1,2	1	
	Methylal	3.1	UN 1234	Flammable Liquid	II	1,2	5	
	Methylamine, anhydrous	2.1	UN 1061	Flammable Gas	-	1,2	5	
	Methylamine, aqueous solution	3.1	UN 1235	Flammable Liquid	II	1,2	5	
	Methylamyl acetate	3.3	UN 1233	Flammable Liquid	III	1,2	1,2	Keep cool
	N-Methylaniline	6.1	UN 2294	St. Andrews Cross	III	1,2	1,2	
	Methylchlorosethyl ether	3.1	UN 1239	Flammable Liquid	II	1	5	
	Methyldichlorosilane	3.2	UN 1242	Flammable Liquid, Corrosive	I	1,2	1	Keep cool
	Methylene bis (phenylene isocyanate). See Diphenylmethane diisocyanate							
	Methylene chloride. See Dichloromethane							
	Methylhydrazine	3.2	UN 1244	Flammable Liquid, Corrosive	I	1,2	1	
	Methylmercaptan	2.1	UN 1064	Flammable Gas	-	1,2	1	
	Methylphenyl dichlorosilane	8	UN 2437	Corrosive	II	1	1	Keep dry. Segregation same as for flammable liquids
	Methyltrichlorosilane	3.2	UN 1250	Flammable Liquid, Corrosive	II	1,2	1	
	Mischmetal, powder	4.1	UN 1333	Flammable Solid	II	1,2	5	Stow 'separate from' flammable substances and oxidizers
	Mischmetal, slabs or ingots	4.1	UN 1333	Flammable Solid	III	1,2	1,2	Stow 'separate from' flammable substances and oxidizers
	Mixed acid. See Acid mixtures, nitrating acid							
	Mixed acid, spent. See Acid mixtures, spent							
	Molybdenum pentachloride	8	UN 2508	Corrosive	III	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Monoethylamine. See Ethylamine							
	Monomethylamine, anhydrous. See Methylamine, anhydrous							
	Monomethylamine, aqueous solution. See Methylamine, aqueous solution							
	Monopropylamine	3.1	UN 1277	Flammable Liquid	II	1,2	5	
	Morpholine	3.3	UN 2034	Flammable Liquid	II	1,2	1,2	
	Motor fuel anti-knock mixtures	6.1	UN 1649	Poison	I	1	5	
	Motor fuel, n.o.s.	3.1	(UN 1203)	Flammable Liquid	II	1,2	5	If flashpoint below 61 deg C segregation same as for flammable liquids
	Motor spirit. See Gasoline							
	Muriatic acid. See Hydrochloric acid							
	Naphtha distillate	3.2	(UN 1268)	Flammable Liquid	II	1,2	1	
	Naphtha, petroleum	3.2	UN 1253	Flammable Liquid	II	1,2	1	
	Naphtha, solvent	3.2	UN 1256	Flammable Liquid	II	1,2	1	
	Naphthalene, crude or refined	4.1	UN 1334	Flammable Solid	III	1,2	1,2	
	Naphthylamine, (alpha)	6.1	UN 2077	St. Andrews Cross	III	1,2	1,2	
	Naphthylamine, (beta)	6.1	UN 1650	Poison	II	1,2	1,2	
	alpha-Naphthylthiourea	6.1	UN 1651	Poison	II	1,2	1,2	
	Naphthyturea	6.1	UN 1652	Poison	II	1,2	1,2	
	Naphthalene, molten	4.1	UN 2304	Flammable Solid	III	1	1	Protect from sparks and open flame
	Natural gas with a high methane content. See Methane or natural gases, etc.							
	Natural gasoline. See Casinghead gasoline							
	Neohexane. See Dimethyl butane							
	Neon, compressed	2.2	UN 1065	Nonflammable Gas	-	1,2	1,2	
	Neon, liquid	2.2	UN 1913	Nonflammable Gas	-	1	5	
	Nickel carbonyl	3.1	UN 1259	Flammable Liquid, Poison	I	1	5	Keep cool. Prohibited on any ship carrying explosives
	Nickel catalyst, finely divided, activated or spent, wetted with not less than 40% water or other suitable liquid	4.2	UN 1378	Spontaneously Combustible	II	1,2	1	
	Nickel cyanide	6.1	UN 1653	Poison	II	1,2	1,2	
	Nicotine	6.1	UN 1654	Poison	II	1,2	1,2	
	Nicotine, (compounds and preparations), n.o.s.	6.1	UN 1655	Poison	I/II	1,2	1,2	
		6.1	UN 1655	St. Andrews Cross	III	1,2	1,2	
	Nicotinic hydrochloride, and solutions	6.1	UN 1656	Poison	II	1,2	1,2	
	Nicotinic salicylate	6.1	UN 1657	Poison	II	1,2	1,2	
	Nicotinic sulphate, solid or solution	6.1	UN 1658	Poison	II	1,2	1,2	
	Nicotinic tartrate	6.1	UN 1659	Poison	II	1,2	1,2	
	Nitrate of soda and potash, mixture. See Sodium nitrate and potash, mixture							
	Nitrates, (inorganic), n.o.s.	5.1	UN 1477	Oxidizer	II	1,2	1,2	
	Nitration acid. See Acid mixtures, nitrating acid							
N	Nitric acid, other than red fuming, all concentrations	8	UN 2031	Corrosive	I/II			
N	Nitric acid, red fuming	8	UN 2032	Corrosive, Oxidizer	I			
	Nitric oxide	2.3	UN 1660	Poison Gas, Oxidizer	-	1	5	Stow 'away from' foodstuffs and living quarters

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Nitric oxide and nitrogen dioxide, mixtures	2.3	UN 1975	Poison Gas, Oxidizer	--	1	3	Stow 'away from' foodstuffs, organic materials and living quarters
	3-Nitro-4-chlorobenzotrifluoride	6.1	UN 2307	Poison	II	1,2	1,2	
	Nitroanilines (o-, m-, p-)	6.1	UN 1661	Poison	II	1,2	1,2	
	Nitrobenzene	6.1	UN 1662	Poison	II	1,2	1,2	
	Nitrobenzenesulphonic acid	8	UN 2305	Corrosive	II	1,2	1,2	
	Nitrobenzol. See Nitrobenzene							
	Nitrobenzotrifluoride	6.1	UN 2306	Poison	II	1,2	1,2	
	Nitrocellulose, containing at least 25% alcohol, by weight, and not exceeding 12.6% nitrogen by dry weight.	4.1	UN 2556	Flammable Solid	I	1	5	
	Nitrocellulose, containing at least 18% plasticizing substance, by weight, and not exceeding 12.6% nitrogen by dry weight	4.1	UN 2557	Flammable Solid	I	1	1	Shade from radiant heat. Keep away from heat and open flame
	Nitrocellulose, containing at least 25%, by weight, water	4.1	UN 2555	Flammable Solid	II	1	5	Shade from radiant heat. Keep away from heat and open flame
	Nitrocellulose, in solution in flammable liquids	3.2	UN 2059	Flammable Liquid	II	1,2	1	Shade from radiant heat. Keep away from heat and open flame
	Nitrocellulose, wetted with, by weight, more than 40% flammable liquids	3.2	UN 2060	Flammable Liquid	II	1,2	1,2	
	Nitrocresols	3.3	--	Flammable Liquid	III	1,2	1	
	Nitrogen, compressed	6.1	UN 2446	Poison	III	1,2	1,2	
	Nitrogen dioxide	2.2	UN 1066	Nonflammable Gas	--	1,2	1,2	
	Nitrogen, liquid	2.2	UN 2040	Nonflammable Gas	--	1	5	Stow 'away from' foodstuffs, organic materials and living quarters
	Nitrogen trifluoride	2.3	UN 2451	Poison Gas	--	1	5	Stow 'away from' living quarters and organic materials
	Nitrogen trioxide	2.3	UN 2421	Poison Gas	--	1	5	Stow 'away from' living quarters and readily combustible substances
	Nitroglycerin solution, up to 1% in alcohol. See Glyceryl trinitrate, solution							
	Nitroguanidine, wetted with not less than 20% of water	4.1	UN 1336	Flammable Solid	I	1,2	3	
	Nitrohydrochloric acid	8	UN 1798	Corrosive	I	1	5	
	Nitromethane	3.3	UN 1261	Flammable Liquid	II	1,2	1,2	
	Nitromuriatic acid. See Nitrohydrochloric acid							
	Nitronaphthalene	4.1	UN 2538	Flammable Solid	III	1,2	1,2	
	Nitrophenols (o-, m-, p-)	6.1	UN 1663	St. Andrews Cross	III	1,2	1,2	
	p-Nitrosodimethylaniline	4.2	UN 1369	Spontaneously Combustible	II	1,2	5	Stow 'away from' foodstuffs
	Nitrostarch, wetted with not less than 20% of water	4.1	UN 1337	Flammable Solid	I	1	5	
	Nitrosyl chloride	2.3	UN 1069	Poison Gas, Corrosive	--	1	5	Stow 'away from' foodstuffs and living quarters
	Nitrosylsulphuric acid	8	UN 2108	Corrosive	II	1	5	Stow 'away from' organic materials
	Nitrotoluenes (o-, m-, p-)	6.1	UN 1664	Poison	II	1,2	1,2	
	Nitrous oxide	2.2	UN 1070	Nonflammable Gas, Oxidizer	--	1,2	1,2	
	Nitroxlyenes (o-, m-, p-)	6.1	UN 1665	Poison	II	1,2	1,2	
	Nonane	3.3	UN 1920	Flammable Liquid	II	1,2	1,2	
	n-Nonanoyl peroxide, technical pure	5.2	UN 2130	Organic Peroxide	II	1	5	Maximum transport temperature 0 deg C
	Nonyl trichlorosilane	8	UN 1799	Corrosive	II	1	1	Keep dry
	Octadecyl trichlorosilane	8	UN 1800	Corrosive	II	1	1	Keep dry
	Octafluorocyclobutane	2.2	UN 1976	Nonflammable Gas	--	1,2	1,2	
	Octane and its isomers	3.2	UN 1262	Flammable Liquid	II	1,2	1	
	n-Octanoyl peroxide, technical pure	5.2	UN 2129	Organic Peroxide	II	1	5	Maximum transport temperature 10 deg C
	Octyl trichlorosilane	8	UN 1801	Corrosive	II	1	1	Keep dry
	Oil gas	2.1	UN 1071	Flammable Gas, Poison Gas	--	1	5	Stow 'away from' living quarters
	Oleum. See Sulphuric acid, fuming							
	Organic peroxides, mixture (this description must be supplemented with the name of the primary constituent of the mixture)	5.2	UN 2756	Organic Peroxide	I/II	1	5	
	Organic peroxides, n.o.s.	5.2	UN 2255	Organic Peroxide	--			
	Organophosphates, (poisonous), n.o.s.	6.1	UN 1893	Poison	I/II	1,2	1,2	
	Osmium tetroxide	6.1	UN 2471	St. Andrews Cross	III	1,2	1,2	
	Oxalates, water soluble	6.1	UN 2471	Poison	I	1,2	1	
	Oxidizing substances, n.o.s.	6.1	UN 2449	St. Andrews Cross	III	1,2	1,2	
	Oxygen and carbon dioxide, mixtures. See Carbon dioxide and oxygen mixtures	5.1	UN 1479	Oxidizer	II	1,2	1,2	
	Oxygen, compressed	2.2	UN 1072	Nonflammable Gas, Oxidizer	--	1,2	1,2	
	Oxygen difluoride	2.3	UN 2190	Poison Gas	--	1	5	Keep dry. Stow 'away from' living quarters and readily combustible substances
	Oxygen, liquid	2.2	UN 1073	Nonflammable Gas, Oxidizer	--	1	5	Stow 'separate from' acetylene. Do not over-stow
	Paint, enamel, lacquer, stain, shellac, varnish, polish, filler (liquid), lacquer base and thinner (not including substances containing nitrocellulose for which See Nitrocellulose.)	3.2	UN 1263	Flammable Liquid	I/III	1,2	1	
	Paper, treated with unsaturated oils, incompletely dried	4.2	UN 1379	Spontaneously Combustible	II/III	1,2	1,2	

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	(3) IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passen- ger vessel	(c) Other requirements
	Paraformaldehyde	4.1	UN 2213	None. Package to be marked "Class 4.1."	III	1,2	1,2	
	Paraldehyde	3.3	UN 1264	Flammable Liquid	III	1,2	1,2	
	Parathion, and mixtures, solid, liquid or under compressed gas	6.1	UN 1668	Poison	I/II	1,2	1,2	
	Pentaborane	6.1	UN 1668	St. Andrews Cross	III	1,2	1,2	
		4.2	UN 1380	Spontaneously Combustible	I	1	5	
	Fentachloroethane	6.1	UN 1669	Poison	II	1,2	1,2	
	Pentane	3.1	UN 1265	Flammable Liquid	I	1,2	5	
	Peracetic acid, maximum concentration 45% by acetic acid or in a mixture of acetic acid and water, with in either case not more than 6% hydrogen peroxide and not more than 1% sulphuric acid	5.2	UN 2131	Organic Peroxide, Corrosive	I	1	5	
	Perborates, (inorganic), n.o.s.	5.1	UN 1480	Oxidizer	II	1,2	1,2	
	Perchlorates, (inorganic), n.o.s.	5.1	UN 1481	Oxidizer	II	1,3	1,3	
	Perchloric acid, not exceeding 50%, by weight, of acid	8	UN 1802	Corrosive, Oxidizer	III	1	1	
	Perchloric acid, over 50% and not exceeding 72% of acid	5.1	UN 1873	Oxidizer, Corrosive	I	1	5	
	Perchloroethylene. See Tetrachloroethylene							
	Perchloromethyl-mercaptan	6.1	UN 1670	Poison	I	1	5	
	Perchloryl fluoride	2.3	(UN 1955)	Poison Gas	-	1	5	
	Perfumery products, flammable liquid	3.2	UN 1266	Flammable Liquid	II	1,2	1	
	Permanganates, (inorganic), n.o.s.	3.3	UN 1266	Flammable Liquid	II	1,2	1,2	
		5.1	UN 1482	Oxidizer	II	1,2	1,2	
	Peroxides, (metallic), n.o.s.	4.1	UN 1483	Oxidizer	II	1,2	1,2	
	Pesticides, (high hazard, solid or liquid), n.o.s.	6.1	UN 2588	Poison	I/II	1,2	1,2	
	Pesticides, (liquid, non-toxic), n.o.s.	6.1	UN 2588	St. Andrews Cross	III	1,2	1,2	
		2.2	UN 1996	Flammable Liquid	II	1,2	1	
		3.3	UN 1996	Flammable Liquid	II	1,2	1,2	
	Pesticides, (liquid, toxic), n.o.s.	3.2	UN 1993	Flammable Liquid, Poison	II	1,2	1	
		3.3	UN 1993	Flammable Liquid, Poison	II	1,2	1,2	
	Pesticides, (low hazard, solid or liquid), n.o.s.	9		None	III	1,2	1,2	
	Petrol. See Gasoline							
	Petroleum crude oil	3.1	UN 1267	Flammable Liquid	II	1,2	5	
		3.2	UN 1267	Flammable Liquid	II	1,2	1	
	Petroleum distillates, n.o.s.	3.3	UN 1267	Flammable Liquid	II	1,2	1,2	
		3.1	UN 1268	Flammable Liquid	II	1,2	5	
		3.2	UN 1268	Flammable Liquid	II	1,2	1	
		3.3	UN 1268	Flammable Liquid	II	1,2	1,2	
	Petroleum ether. See Petroleum spirit							
	Petroleum gases, liquefied	2.1	UN 1073	Flammable Gas	-	1,2	1	
	Petroleum oil	3.1	UN 1270	Flammable Liquid	II	1,2	5	
		3.2	UN 1270	Flammable Liquid	II	1,2	1	
	Petroleum spirit	3.3	UN 1270	Flammable Liquid	II	1,2	1,2	
		3.1	UN 1271	Flammable Liquid	II	1,2	5	
		3.2	UN 1271	Flammable Liquid	II	1,2	1	
		3.3	UN 1271	Flammable Liquid	II	1,2	1,2	
	Phenetidines	6.1	UN 2341	St. Andrews Cross	III	1,2	1,2	
	Phenol	6.1	UN 1671	Poison	II	1,2	1,2	
	Phenolsulphonic acid, liquid	8	UN 1803	Corrosive	II	1,2	1	
	Phenyl isocyanate	6.1	UN 2487	Poison	II	1	5	Metal drums only under deck
	Phenyl trichloroallane	8	UN 1804	Corrosive	II	1	1	Shade from radiant heat
	Phenylacetonitrile. See Benzyl cyanide, liquid							Keep dry
	Phenylcarbylamine chloride	6.1	UN 1672	Poison	I	1	5	
	Phenylenediamines, (o-, m-, p-)	6.1	UN 1673	St. Andrews Cross	III	1,2	1,2	
	Phenylhydrazine	6.1	UN 2572	Poison	II	1,2	1,2	
	Phenylmercuric acetate	6.1	UN 1674	Poison	II	1,2	1,2	
	Phenylmercuric compounds, n.o.s.	6.1	UN 2026	Poison	I/II	1,2	1,2	
		6.1	UN 2026	St. Andrews Cross	III	1,2	1,2	
	Phenylmercuric hydroxide	6.1	UN 1894	Poison	II	1,2	1,2	
	Phenylmercuric nitrate	6.1	UN 1895	Poison	II	1,2	1,2	
	Phosgene	2.3	UN 1076	Poison Gas, Corrosive	-	1	5	
	Phosphine	2.3	UN 2199	Poison Gas, Flammable Gas	-	1	5	
	o-Phosphoric acid, liquid	8	UN 1805	Corrosive	III	1,2	1,2	Glass carboys in humpers prohibited under deck. Keep dry
	o-Phosphoric acid, solid	8	UN 1805	Corrosive	III	1,2	1,2	
	Phosphoric anhydride. See Phosphorus pentoxide							
	Phosphorous bromide. See Phosphorus tribromide							
	Phosphorous chloride. See Phosphorus trichloride							
	Phosphorus, amorphous	4.1	UN 1338	Flammable Solid	III	1,2	1,2	
	Phosphorus heptasulphide, free from yellow or white phosphorus	4.1	UN 1339	Flammable Solid	II	1,2	1	
	Phosphorus oxybromide	8	UN 1939	Corrosive	II	1	1	Stow 'separate from' oxidizing substances
	Phosphorus oxychloride. See Phosphoryl chloride							Keep dry. Glass carboys prohibited on passenger vessels
	Phosphorus pentachloride	8	UN 1806	Corrosive	II	1	1	Keep dry

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Phosphorus pentafluoride	2.3.	UN 2198	Poison Gas	-	1	5	Stow 'away from' living quarters
	Phosphorus pentasulphide, free from yellow or white phosphorus	4.1	UN 1340	Flammable Solid	II	1,2	1,2	Stow 'separate from' oxidizing substances
	Phosphorus pentoxide	8	UN 1807	Corrosive	II	1,2	1,2	Glass bottles prohibited under deck
	Phosphorus sesquisulphide, free from yellow or white phosphorus	4.1	UN 1341	Flammable Solid	II	1,2	1	Stow 'separate from' oxidizing substances
	Phosphorus tribromide	8	UN 1808	Corrosive	II	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Phosphorus trichloride	8	UN 1809	Corrosive	II	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Phosphorus trifluoride	2.3.	(UN 1955)	Poison Gas	-	1	5	Stow 'away from' living quarters
	Phosphorus trisulphide, free from yellow or white phosphorus	4.1	UN 1343	Flammable Solid	II	1,2	1	Stow 'separate from' oxidizing substances
	Phosphorus white, molten	4.2	UN 2447	Spontaneously Combustible	I	1	5	
	Phosphorus, white or yellow, dry	4.2	UN 1381	Spontaneously Combustible	I	1,2	5	
	Phosphorus, white or yellow, in water	4.2	UN 1381	Spontaneously Combustible	I	1,2	5	
	Phosphoryl chloride	8	UN 1810	Corrosive	II	1	1	Glass carboys prohibited on passenger vessels
	Phthalic anhydride, dust, powder or molten liquid	8	UN 2214	None	III	1,2	1,2	Stow 'away from' foodstuffs and oxidizing substances
	Picric acid, wetted with not less than 10% of water	4.1	UN 1344	Flammable Solid	I	1	5	Stow 'away from' heavy metals and their compounds
	Picric acid, wetted with not less than 30% of water	4.1	UN 1344	Flammable Solid	I	1,2	5	Stow 'away from' heavy metals and their compounds
	Pinane hydroperoxide, technical pure	5.2	UN 2162	Organic Peroxide	I	1	5	
	Pine oil	3.3	UN 1272	Flammable Liquid	III	1,2	1,2	
	Pivaloyl chloride	3.2	UNL2438	Corrosive, Flammable Liquid	II	1	5	
	Plastics moulding materials evolving flammable vapours	9	UN 2121	None	III	1,2	1,2	
	Plastics, (spontaneously combustible), n.o.s.	4.2	UN 2006	Spontaneously Combustible	III	1	5	
	Poisonous liquids, n.o.s.	6.1	UN 2810	Poison	I/II	1,2	1	
	Poisonous solids, n.o.s.	6.1	UN 2810	Poison	III	1,2	1,2	
	Polishes. See Paints, etc.	6.1	UN 2811	St. Andrews Cross	I/II	1,2	1	
	Polishing fluid. See Flammable liquid preparations, n.o.s.	6.1	UN 2811	Poison	III	1,2	1	
	Polystyrene beads, expandable, containing flammable liquid. See Plastics moulding materials	6.1	UN 2811	St. Andrews Cross	I/II	1,2	1,2	
	Potassium arsenite	6.1	UN 1677	Poison	II	1,2	1,2	
	Potassium arsenite	6.1	UN 1678	Poison	II	1,2	1,2	
	Potassium bifluoride, solid	8	UN 1811	Corrosive	II	1,2	1,2	Keep dry
	Potassium bifluoride, solution	8	UN 1811	Corrosive	II	1,2	1,2	
	Potassium borohydride	4.3	UN 1870	Dangerous When Wet	I	1,2	5	
	Potassium bromate	5.1	UN 1484	Oxidizer	II	1,2	1,2	
	Potassium chlorate	5.1	UN 1485	Oxidizer	II	1,2	1,2	Stow 'separate from' ammonium compounds and 'away from' powdered metals
	Potassium cuprocyanide	6.1	UN 1679	Poison	II	1,2	1,2	Stow 'separate from' ammonium compounds and 'away from' powdered metals
	Potassium cyanide	6.1	UN 1680	Poison	I	1,2	1,2	Stow 'away from' acids
	Potassium dithionite	4.2	UN 1929	Spontaneously Combustible	II	1,2	5	Keep dry
	Potassium fluoride	6.1	UN 1812	St. Andrews Cross, Corrosive	III	1,2	1,2	Stow 'away from' acids
	Potassium hydrogen fluoride. See Potassium bifluoride, solution							
	Potassium hydroxide, solid	8	UN 1813	Corrosive	II	1,2	1,2	Keep dry
	Potassium hydroxide, solution	8	UN 1814	Corrosive	II	1,2	1,2	
	Potassium hypochlorite, solution. See Hypochlorite, solutions, etc.							
	Potassium metal	4.2	UN 2257	Spontaneously Combustible	II	1,2	5	
	Potassium, metal alloys	4.3	UN 1420	Dangerous When Wet	II	1,2	5	
	Potassium metavamdate	6.1	UN 2664	Poison	II	1,2	1,2	
	Potassium nitrate	5.1	UN 1486	Oxidizer	III	1,2	1,2	
	Potassium nitrate and sodium nitrite, mixture	5.1	UN 1487	Oxidizer	II	1,2	1,2	Stow 'separate from' ammonium compounds and cyanides, and 'away from' foodstuffs
	Potassium nitrate bags, empty. See Bags, empty and unwashed, etc.							
	Potassium nitrite	5.1	UN 1488	Oxidizer	II	1,2	1,2	Stow 'separate from' ammonium compounds and cyanides, and 'away from' foodstuffs
	Potassium oxide	8	UN 2033	Corrosive	II	1,2	1,2	Keep dry
	Potassium perchlorate	5.1	UN 1489	Oxidizer	II	1,2	1,2	Stow 'away from' powdered metals
	Potassium permanganate	5.1	UN 1490	Oxidizer	II	1,2	1,2	Stow 'separate from' ammonium compounds and hydrogen peroxide
	Potassium peroxide	5.1	UN 1491	Oxidizer	I	1,2	1,2	Keep dry
	Potassium persulphate	5.1	UN 1492	Oxidizer	III	1,2	1,2	
	Potassium phosphide	4.3	UN 2012	Dangerous When Wet, Poison	I	1	5	
	Potassium silicofluoride, solid	6.1	UN 2655	St. Andrews Cross	III	1,2	1,2	Stow 'away from' acids
	Potassium-sodium, alloy	4.3	UN 1422	Dangerous When Wet	I	1,2	5	

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
Potassium sulphide, anhydrous or containing less than 30% water of crystallization	4.2 UN 1382	Spontaneously Combustible	II	1,2	1,2	Slow 'separate from' liquid acids		
Potassium sulphide, hydrated; containing not less than 30% water of crystallization	8 UN 1847	Corrosive	II	1,2	1,2	Stow 'separate from' explosives and acids		
Primers, cannon	1.4 G UN 0320	Explosive (1.4G)	-	1,3	1,3			
Primers, cap type	1.4B UN 0378	Explosive (1.4B)	-	1,3	1,3			
Primers, tubular	1.4S UN 0044	None. Package to be marked '1.4S'	-	1,3	1,3			
Projectiles, inert, with tracer	1.4G UN 0320	Explosive (1.4G)	-	1,3	1,3			
Propane	1.4S UN 0376	None. Package to be marked '1.4S'	-	1,3	1,3			
Propanol	2.1 UN 1978	Flammable Gas	-	1,2	1	Stow 'away from' living quarters		
Propionaldehyde	3.2 UN 1274	Flammable Liquid	II	1,2	1			
Propionic acid, solution containing not less than 80% acid	3.2 UN 1275	Flammable Liquid	II	1,2	1			
Propionic anhydride	8 UN 1848	Corrosive	III	1,2	1,2	Stow 'separated by a complete compartment or hold from' organic peroxides, and separated longitudinally by an intervening complete compartment or hold from explosives		
Propionyl chloride	8 UN 2496	Corrosive	III	1,2	1,2	Keep dry. Glass carboys prohibited on passenger vessels		
Propionyl peroxide, maximum concentration 28% in solution	8 UN 1815	Corrosive, Flammable Liquid	II	1	1	Keep dry. Slow 'separated longitudinally by air intervening complete compartment or hold from' explosives		
n-Propyl acetate	5.2 UN 2132	Organic Peroxide	II	1	5	Maximum transport temperature 15 deg C		
sec-Propyl alcohol. See Isopropanol	3.2 UN 1276	Flammable Liquid	II	1,2	1			
n-Propyl alcohol. See Propanol								
Propyl chloride	3.1 UN 1278	Flammable Liquid	II	1,2	5	Keep cool		
Propyl formates	3.2 UN 1281	Flammable Liquid	II	1,2	1			
n-Propyl nitrate	3.2 UN 1865	Flammable Liquid	II	1,2	1			
Propyl trichlorosilane	8 UN 1816	Corrosive	III	1	1	Keep dry. Stow 'separated longitudinally by an intervening compartment or hold from' explosives		
Propylamine. See Monopropylamine								
Propylene	2.1 UN 1077	Flammable Gas	-	1,2	1			
Propylene dichloride	3.2 UN 1279	Flammable Liquid	II	1,2	1	Stow 'away from' living quarters		
Propylene oxide, inhibited	3.1 UN 1280	Flammable Liquid	I	1,2	5	Keep cool		
Propyleneimine, inhibited	3.2 UN 1921	Flammable Liquid	I	1,2	1			
Pyridine	3.2 UN 1282	Flammable Liquid, Poison	II	1,2	1			
Pyrophoric alloys	4.2 UN 1383	Spontaneously Combustible	II	1	5			
Pyrophoric fuel, n.o.s.	4.2 UN 1375	Spontaneously Combustible	I	1	5	Prohibited on vessels carrying explosives		
Pyrophoric liquids, n.o.s. See Pyrophoric fuel, n.o.s.								
Pyrophoric metals								
Pyrosulphuryl chloride	4.2 UN 1383	Spontaneously Combustible	II	1	5			
Pyroxylon. See Nitrocellulose	8 UN 1817	Corrosive	II	1	1	Keep dry. Glass carboys prohibited on passenger vessels		
Pyrrolidine								
R 12. See Dichlorodifluoromethane	3.2 UN 1922	Flammable Liquid	II	1,2	1			
R 22. See Chlorodifluoromethane								
Rags, oily								
Rare gases, mixtures	4.2 UN 1856	Spontaneously Combustible	II	1,2	1,2	Keep dry		
Rare gases, mixtures with nitrogen	2.2 UN 1979	Nonflammable Gas	-	1,2	1,2			
Rare gases, mixtures with oxygen	2.2 UN 1981	Nonflammable Gas	-	1,2	1,2			
Receptacles, small, containing flammable compressed gas, not fitted with a dispersion device, not refillable	2.2 UN 1980	Nonflammable Gas	-	1,2	1,2			
Reducing liquid. See Flammable liquid preparation, n.o.s.	2.1 UN 2037	Flammable Gas	-	1,2	1,2			
Refrigerant gases, n.o.s.								
Release devices, explosive	2.1 UN 1078	Flammable Gas	-	1	1			
Removing liquid. See Flammable liquid preparations, n.o.s.	2.2 UN 1078	Nonflammable Gas	-	1,2	1,2			
Resin, solution in flammable liquid	1.4 S UN 0173	None. Package to be marked '1.4 S'	-	1,3	1,3			
Rivets, explosive	3.3 UN 1866	Flammable Liquid	II	1,2	1			
	3.3 UN 1866	Flammable Liquid	II	1,2	1,2			
Road asphalt, liquid, tar or oil. See Cut-backs, asphalt or bitumen	1.4 S UN 0174	None. Package to be marked '1.4 S'	-	1,3	1,3			
Rodenticides, n.o.s.								
Rosin oil	6.1 UN 1681	Poison	VII	1,2	1,2	Stow 'separate from' foodstuffs		
	6.1 UN 1681	St. Andrews Cross	III	1,2	1,2	Stow 'separate from' foodstuffs		
	9 UN 1681	None	III	1,2	1,2	Stow 'away from' foodstuffs		
Rubber scrap, powdered or granulated	3.2 UN 1286	Flammable Liquid	III	1,2	1			
	3.3 UN 1286	Flammable Liquid	III	1,2	1			
	4.1 UN 1345	Flammable Solid	II	1,2	1,2			

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	(3) IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	Rubber shoddy. See Rubber scrap							
	Rubber solution	3.2	UN 1287	Flammable Liquid	II	1,2	1	
		3.3	UN 1287	Flammable Liquid	II	1,2	1,2	
	Rubidium, (metal)	4.3	UN 1423	Dangerous When Wet	I	1,2	5	
	Sand acid. See Fluosilicic acid							
	Seed cake, containing vegetable oil, mechanically expelled seeds, containing more than 10% of oil or more than 20% of oil and moisture combined	4.2	UN 1386	None. Package to be marked 'Class 4.2'	III	1,2	5	
	Seed cake, containing vegetable oil, solvent extractions and expelled seeds containing not more than 10% of oil and, when the amount of moisture is higher than 10%, not more than 20% of oil and moisture combined	4.2	UN 1386	None. Package to be marked 'Class 4.2'	III	1,2	1,2	
	Seed cake, containing vegetable oil, solvent extractions containing not more than 1.5% of oil and 11% of moisture	4.2	UN 2217	None. Package to be marked 'Class 4.2'	III	1,2	1,2	
	Sciatic acid	8	UN 1905	Corrosive	I	1,2	1,2	Keep dry
	Selenium hexafluoride	2.3	UN 2194	Poison Gas	-	1	5	Stow 'away from' living quarters
	Shale oil	3.2	UN 1288	Flammable Liquid	II	1,2	1	
		3.3	UN 1288	Flammable Liquid	II	1,2	1,2	
	Sheep dips, (poisonous), n.o.s.	6.1	UN 1682	Poison	I/II	1,2	1,2	Stow 'separate from' foodstuffs.
		6.1	UN 1682	St. Andrews Cross	III	1,2	1,2	Stow 'separate from' foodstuffs.
		9	UN 1682	None	III	1,2	1,2	Stow 'away from' foodstuffs.
	Shellac. See Paints, etc.							
	Signal devices, hand	1.4S	UN 0373	None. Package to be marked '1.4S'	-	1,3	1,3	
	Signal devices, hand	1.4 G	UN 0191	Explosive (1.4G)	-	1,3	1,3	
	Signals, smoke, without explosive sound unit	1.4 G	UN 0197	Explosive (1.4G)	-	1,3	1,3	
	Silane	2.3	UN 2203	Poison Gas, Flammable Gas	-	1	5	
	Silicofluoric acid. See Fluosilicic acid							Shade from radiant heat. Stow 'away from' living quarters, 'separate from' oxidizers
	Silicofluorides, solid, n.o.s.	6.1	(UN 2811)	St. Andrews Cross	III	1,2	1,2	Stow 'away from' acids
	Silicon chloride. See Silicon tetrachloride							
	Silicon powder, amorphous	4.1	UN 1346	Flammable Solid	III	1,2	1,2	
	Silicon tetrachloride	8	UN 1818	Corrosive	II	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Silicon tetrafluoride							
	Silver arsenite	2.3	UN 1859	Poison Gas, Corrosive	-	1	5	
	Silver cyanide	6.1	UN 1683	Poison	II	1,2	1,2	
	Silver nitrate	6.1	UN 1684	Poison	II	1,2	1,2	Stow 'away from' strong liquid acids
	Soat, dry. See Fibre, vegetable, dry	5.1	UN 1493	Oxidizer	II	1,2	1,2	Stow 'away from' foodstuffs
	Sludge acid	8	UN 1906	Corrosive	II	1,2	1	
	Soda lime	8	UN 1907	Corrosive	III	1,2	1,2	Stow 'away from' fluorides. Metal drums only under deck
	Sodium aluminate, solution	8	UN 1819	Corrosive	II	1,2	1,2	Keep dry
	Sodium amalgam							
	Sodium amide	4.3	UN 1424	Dangerous When Wet	I	1,2	1,2	
	Sodium-ammonium-vanadate	4.3	UN 1425	Dangerous When Wet	II	1,2	1,2	
	Sodium arsanilate	6.1	UN 2863	Poison	II	1,2	5	
	Sodium arsenite	6.1	UN 2473	St. Andrews Cross	III	1,2	1,2	
	Sodium arsenite, aqueous solutions	6.1	UN 1685	Poison	II	1,2	1,2	
		6.1	UN 1686	Poison	I/II	1,2	1,2	
	Sodium arsenite, solid	6.1	UN 1686	St. Andrews Cross	III	1,2	1,2	
	Sodium azide	6.1	UN 2027	Poison	II	1,2	1,2	
	Sodium bisulphite, solid. See Sodium hydrogen sulphite							Stow 'away from' oxidizers and organic peroxides
	Sodium bisulphite, solution. See Sodium hydrogen sulphite, solution							Stow 'away from' heavy metals and their compounds, 'separate from' acids
	Sodium borohydride	4.3	UN 1426	Dangerous When Wet	I	1,2	5	
	Sodium bromate	5.1	UN 1494	Oxidizer	II	1,2	1,2	Stow 'away from' powdered metals, 'separate from' ammonium compounds
	Sodium cacodylate							Stow 'away from' acids
	Sodium chlorate	6.1	UN 1688	Poison	II	1,2	1,2	Stow 'away from' powdered metals, 'separate from' ammonium compounds
	Sodium chlorite	5.1	UN 1495	Oxidizer	II	1,2	1,2	Stow 'away from' powdered metals, 'separate from' ammonium compounds
	Sodium chlorite	5.1	UN 1496	Oxidizer	II	1,2	1,2	Stow 'away from' powdered metals, 'separate from' ammonium compounds
	Sodium chlorite, solution containing more than 5% available chlorine	8	UN 1908	Corrosive	II	1,2	1	Glass carboys in hampers not permitted under deck
	Sodium cuprocyanide, solid							Keep dry. Stow 'separate from' acids
	Sodium cyanide	6.1	UN 2316	Poison	I	1,2	1,2	Stow 'away from' acids
	Sodium dinitro-o-cresolate, wetted with not less than 10% of water	6.1	UN 1689	Poison	I	1,2	1,2	Stow 'away from' heavy metals and their compounds
	Sodium dinitro-o-cresolate, wetted with not less than 15% of water	4.1	UN 1348	Flammable Solid, Poison	I	1	5	Stow 'away from' heavy metals and their compounds
	Sodium dithionite	4.2	UN 1384	Flammable Solid, Poison	I	1,2	5	Stow 'away from' heavy metals and their compounds
	Sodium fluoride, solid	6.1	UN 1690	St. Andrews Cross	III	1,2	1,2	New metal drums only under deck
	Sodium fluoride, solution	6.1	(UN 2810)	Poison	II	1,2	1,2	Stow 'away from' acids

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	(3) IMCO Class	(4) Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Sodium hydrate. See Sodium hydroxide, solution							
	Sodium hydride	4.3	UN 1427	Dangerous When Wet	I	1,2	3	
	Sodium hydrogen fluoride	8	UN 2439	Corrosive	II	1,2	1,2	Keep cool and dry
	Sodium hydrogen sulphate, containing more than 3% free acid	8	UN 1821	Corrosive	II	1,2	1,2	
	Sodium hydrogen sulphite, solution	8	UN 1909	Corrosive	II	1,2	1,2	
	Sodium hydrosulphide, solid	4.2	UN 2318	Spontaneously Combustible	II	1,2	1,2	
	Sodium hydroxide, solid	8	UN 1823	Corrosive	II	1,2	1,2	Keep dry
	Sodium hydroxide, solution	8	UN 1824	Corrosive	II	1,2	1,2	
	Sodium, (metal)	4.3	UN 1428	Dangerous When Wet	II	1,2	5	
	Sodium metal dispersion in organic liquids	4.3	UN 1429	Dangerous When Wet	I	1,2	5	
	Sodium methylate	4.3	UN 1431	Dangerous When Wet	I	1,2	5	
	Sodium methylate, solutions in alcohol	3.2	UN 1289	Flammable Liquid	II	1,2	1	
	Sodium monoxide	3.3	UN 1289	Flammable Liquid	II	1,2	1	
	Sodium nitrate	8	UN 1625	Corrosive	II	1,2	1,2	Keep dry
	Sodium nitrate and potash, mixture	5.1	UN 1498	Oxidizer	III	1,2	1,2	
	Sodium nitrate and potassium nitrate, mixtures	5.1	UN 1478	Oxidizer	III	1,2	1,2	
	Sodium nitrate bags, empty. See Bags, empty and unwashed, etc.	5.1	UN 1499	Oxidizer	III	1,2	1,2	
	Sodium nitrite	5.1	UN 1500	Oxidizer	II	1,2	1,2	
	Sodium pentachlorophenate	6.1	UN 2367	Poison	II	1,2	1,2	
	Sodium perchlorate	5.1	UN 1502	Oxidizer	II	1,2	1,2	
	Sodium permanganate	5.1	UN 1503	Oxidizer	II	1,2	1,2	
	Sodium peroxide	5.1	UN 1504	Oxidizer	I	1,2	1	
	Sodium persulphate	5.1	UN 1505	Oxidizer	III	1,2	1,2	
	Sodium phenolate, solid	8	UN 2497	Corrosive	III	1,2	1,2	
	Sodium phosphide	4.3	UN 1432	Dangerous When Wet, Poison	I	1	5	
	Sodium picramate, wetted with not less than 20% of water	4.1	UN 1349	Flammable Solid	I	1,2	5	
	Sodium-potassium alloy. See Potassium-sodium, alloy							
	Sodium silicofluoride, solid	6.1	UN 2674	St. Andrews Cross	III	1,2	1,2	
	Sodium sulphide, anhydrous or containing less than 30% water of crystallization	4.2	UN 1383	Spontaneously Combustible	II	1,2	1,2	
	Sodium sulphide, hydrated; containing not less than 30% water of crystallization	9	UN 1840	None	II	1,2	1,2	
	Solvents, (non-toxic), n.o.s.	3.2	UN 1998	Flammable Liquid	II	1,2	1	
	Solvents, (toxic), n.o.s.	3.3	UN 1998	Flammable Liquid	II	1,2	1,2	
	Spent mixed acid. See Acid mixtures, spent							
	Spirits of salts. See Hydrochloric acid							
	Squirts	1.4 S	UN 0206	None. Package to be marked '1.4 S'	-	1,3	1,3	
	Stains. See Paints, etc.							
	Stannic chloride, anhydrous	8	UN 1827	Corrosive	II	1	1	
	Stannic chloride pentahydrate	8	UN 2440	Corrosive	III	1,2	1,2	Keep dry. Glass carboys prohibited on passenger vessels
	Stannic phosphide	8	UN 1433	Dangerous When Wet	I	1	5	Keep dry
	Steel swarf. See Iron swarf							
	Stibine	2.3	(UN 1953)	Poison Gas, Flammable Gas	-	1	5	
	Straw	4.1	UN 1327	None	III	1,2	1,2	
	Strike anywhere matches. See Matches, strike anywhere							
	Strontium, alloys, non-pyrophoric	4.3	UN 1434	Dangerous When Wet	II	1,2	5	
	Strontium arsenite	6.1	UN 1691	Poison	II	1,2	1,2	
	Strontium chlorate	5.1	UN 1506	Oxidizer	II	1,2	1,2	
	Strontium nitrate	5.1	UN 1507	Oxidizer	III	1,2	1,2	
	Strontium perchlorate	5.1	UN 1508	Oxidizer	II	1,2	1,2	
	Strontium peroxide	5.1	UN 1509	Oxidizer	II	1,2	1,2	
	Strontium phosphide	4.3	UN 2013	Dangerous When Wet, Poison	I	1	5	
	Strontium, powdered. See Pyrophoric metals							
	Strychnine, and salts							
	Styrene monomer, inhibited	6.1	UN 1692	Poison	I	1,2	1,2	
	Succinic acid peroxide, technical pure	3.3	UN 2055	Flammable Liquid	II	1,2	1,2	
	Sulphides, n.o.s.	5.2	UN 2135	Organic Peroxide	I	1	5	
	Sulphur chlorides	4.2	-	Spontaneously Combustible	III	1	5	
		8	UN 1828	Corrosive	I	1	1	Keep dry. Glass carboys prohibited on passenger vessels

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	(5) Label(s) required	(6) Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Pas- enger vessel	(c) Other requirements
	Sulphur dichloride. See Sulphur chlorides	2.3	UN 1079	Poison Gas	-	1,2	3	Stow 'away from' living quarters
	Sulphur dioxide	2.2	UN 1080	Nonflammable Gas	-	1,2	1,2	
	Sulphur hexafluoride	4.1	UN 1350	Flammable Solid	III	1,2	1,2	Protect from sparks and open flame. Stow 'separate from' oxidizing substances
	Sulphur, lump or powder	4.1	UN 2448	Flammable Solid	III	1	1	Stow 'separate from' oxidizers, 'away from' living quarters. Protect from sparks and open flame
	Sulphur, molten	4.1	UN 2448	Flammable Solid	III	1	1	Stow 'away from' living quarters
	Sulphur tetrafluoride	2.3	UN 2418	Poison Gas	-	1	3	Keep dry. Glass bottles not permitted under deck. Stow 'away from' other corrosives except nitric and sulphuric acids
	Sulphur trioxide, stabilized	8	UN 1829	Corrosive	I	1,2	1,2	Stow 'separate from' oxidizers and all other corrosives except nitric acids, sulphur trioxide and other sulphuric acids
	Sulphuric acid, containing more than 51% acid	8	UN 1830	Corrosive	II	1,2	1	Stow 'away from' fluorides. Glass carboys in hampers not permitted under deck
	Sulphuric acid, containing not more than 51% acid	8	UN 1830	Corrosive	II	1,2	1	Stow 'away from' fluorides and all other corrosives except nitric acids, sulphur trioxide and other sulphuric acids
	Sulphuric acid, fuming	8	UN 1831	Corrosive	I	1,2	1	Stow 'away from' fluorides. Glass carboys in hampers not permitted under deck
	Sulphuric acid, spent	8	UN 1832	Corrosive	II	1,2	1	Stow 'away from' fluorides. For concentrations of more than 51% acid, stow 'away from' all other corrosives except nitric acids, sulphur trioxide and other sulphuric acids
	Sulphuric and hydrofluoric acid, mixtures. See Acid mixtures, hydrofluoric and sulphuric							
	Sulphuric anhydride. See Sulphur trioxide, stabilized							
	Sulphurous acid	8	UN 1833	Corrosive	II	1,2	1	Glass carboys in hampers not permitted under deck
	Sulphuryl chloride	8	UN 1834	Corrosive	I	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Sulphuryl fluoride	2.2	UN 2191	Nonflammable Gas, Corrosive	-	1,2	5	Stow 'away from' living quarters
	T.E.L. See Motor fuel anti-knock mixtures							
	Tara, liquid. See Cut-backs, asphalt or bitumen							
	Tear gas candles, non-explosive	6.1	UN 1700	Poison	II	1	5	
	Tear gas grenades, non-explosive. See Tear gas candles							
	Tear gas, (irritating substances, liquid or solid), n.o.s.	6.1	UN 1692	Poison	I/II	1	5	
		6.1	UN 1693	St. Andrews Cross	III	1	5	
		2.3	UN 2195	Poison Gas	-	1	5	Stow 'away from' living quarters
	Tellurium hexafluoride							
	Tetrabromoethane. See Acetylene tetrabromide							
	1,1,2,2-Tetrachloroethane							
	Tetrachloroethylene	6.1	UN 1702	Poison	II	1,2	1,2	
	Tetraethyl dithiopyrophosphate, liquid and mixtures	6.1	UN 1897	St. Andrews Cross	III	1,2	1,2	
		6.1	UN 1704	Poison	I/II	1	5	
	Tetraethyl dithiopyrophosphate with gases, including solutions and mixtures thereof	6.1	UN 1703	Poison, Non-flammable	III	1	5	
		6.1	UN 1703	Compressed Gas	I/II	1	5	
				St. Andrews Cross	III	1	5	
	Tetraethyl lead. See Motor fuel anti-knock mixtures							
	Tetraethyl pyrophosphate and compressed gas, mixture	6.1	UN 1705	Poison, Non-flammable	I/II	1	5	
		6.1	UN 1705	Compressed Gas	III	1	5	Shade from radiant heat. Segregation same as for nonflammable gases
				St. Andrews Cross				Shade from radiant heat. Segregation same as for nonflammable gases
	Tetraethyl silicate	3.3	UN 1292	Flammable Liquid	II	1,2	1,2	
	Tetraethylpentamine	8	UN 2320	Corrosive	III	1,2	1,2	Glass carboys prohibited on passenger vessels
	Tetrafluoroethylene, Inhibited	2.2	UN 1081	Nonflammable Gas	-	1,2	1,2	Stow 'away from' living quarters
	Tetrafluorohydrazine	2.3	(UN 1955)	Poison Gas	--	11	5	Stow 'away from' living quarters and readily combustible substances, 'separate from' hydrogen
	Tetrafluoromethane	2.2	UN 1982	Nonflammable Gas	-	1,2	1,2	
	Tetrahydrofuran	3.1	UN 2036	Flammable Liquid	II	1,2	5	Keep cool
	Tetraulin hydroperoxide, technical pure	5.2	UN 2136	Organic Peroxide	I	1	5	
	1,1,3,3-Tetramethyl butyl hydroperoxide, technical pure	5.2	UN 2160	Organic Peroxide	II	1	5	
	1,1,3,3-Tetramethyl butyl peroxy-2-ethyl hexanoate, technical pure	5.2	UN 2161	Organic Peroxide	I	1	5	Maximum transport temperature 20 deg C
	Tetramethylammonium hydroxide	8	UN 1835	Corrosive	II	1,2	1,2	
	Tetranitromethane	5.1	UN 1510	Oxidizer	I	1	5	Shade from radiant heat. Stow 'away from' foodstuffs
	Textile waste, (wet), n.o.s.	4.2	UN 1857	Spontaneously Combustible	III	1,2	1,2	
	Thallium chloride	5.1	UN 2573	Oxidizer, POISON	II	1,2	1,2	
	Thallium compounds	6.1	UN 1707	Poison	II	1,2	1,2	
	Thinners. See Paints, etc.							
	Thinning liquid. See Flammable liquid preparations, n.o.s.							
	Thiocarbonyl chloride. See Thiophosgene							
	Thioglycolic acid	8	UN 1940	Corrosive	II	1,2	1,2	Glass carboys in hampers prohibited under deck
	Thionyl chloride	8	UN 1836	Corrosive	I	1	1	Keep dry. Glass carboys prohibited on passenger vessels

172.102 Optional Hazardous Materials Table (Cont'd)

(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packing Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Thiophosgene	6.1	UN 2474	Poison	II	1,2	1	
	Thiophosphoryl chloride	8	UN 1837	Corrosive	II	1	1	
	Tin chloride, fuming. See Stannic chloride, anhydrous							
	Tin tetrachloride. See Stannic chloride, anhydrous							
	Tinctures, medicinal	3.2	UN 1293	Flammable Liquid	II	1,2	1	
	Titanium hydride	4.1	UN 1871	Flammable Solid	II	1,2	5	
	Titanium metal powder, dry	4.2	UN 2546	Spontaneously Combustible	II	1,2	5	
	Titanium metal powder, wet, with not less than 25% water (a visible excess of water must be present)	4.1	UN 1352	Flammable Solid	II	1,2	5	
	Titanium tetrachloride	8	UN 1838	Corrosive	II	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Titanium trichloride	4.2	UN 2441	Spontaneously Combustible, Corrosive	II	1,2	1,2	
	Toe puffs, nitrocellulose base	4.1	UN 1353	Flammable Solid	III	1	5	
	Toluene	3.2	UN 1294	Flammable Liquid	II	1,2	1	
	Toluene diisocyanato (T.D.I.). See Isocyanates, with a boiling point below 300 deg C							
	Toluidines (o-, m-, p-)	6.1	UN 1708	Poison	II	1,2	1,2	
	2,4-Tolylendiamine	6.1	UN 1709	St. Andrews Cross	III	1,2	1,2	Slow 'away from' acids
	Tracers for ammunition	1.4 G	UN 0306	Explosive (1.4G)	-	1,3	1,3	
	Tributylamine	8	UN 2542	Corrosive	III	1,2	1,2	
	Trichloroacetic acid, solid	8	UN 1839	Corrosive	II	1,2	1,2	Keep dry
	Trichloroacetic acid, solutions	8	UN 2564	Corrosive	II	1,2	1	Glass carboys in hampers prohibited under deck
	Trichloroacetyl chloride	8	UN 2442	Corrosive	II	1	5	Keep dry
	Trichlorobenzene, liquid	6.1	UN 2321	St. Andrews Cross	III	1,2	1,2	
	Trichlorobutane	6.1	UN 2322	St. Andrews Cross	III	1,3	1,3	
	Trichloroethylene	6.1	UN 1710	St. Andrews Cross	III	1,2	1,2	Slow 'away from' sources of heat. Segregation same as for flammable liquids
	Trichlorosilane	4.3	UN 1295	Dangerous When Wet, Flammable Liquid	I	1	5	
	Tricresylphosphate, with more than 3% ortho isomer	6.1	UN 2574	Poison	II	1,2	1,2	
	Triethylaluminum. See Aluminum trimethyl							
	Triethylamine	3.2	UN 1296	Flammable Liquid	II	1,2	1	
	Triethylcitetramine	8	UN 2259	Corrosive	II	1,2	1	Stow 'separate from' nitric acid, 'away from' acids, copper and copper alloys and living quarters
	Trifluorobromomethane. See Bromotetrafluoroethane							
	Trifluorochloroethane	2.2	UN 1983	Nonflammable Gas	-	1,2	1,2	
	Trifluorochloroethylene	2.1	UN 1082	Flammable Gas	-	1,2	1	Slow 'away from' living quarters
	Trifluorochloromethane. See Chlorotetrafluoroethane							
	Trifluoroethane	2.1	UN 2035	Flammable Gas	-	1,2	1	
	Trifluoromethane	2.2	UN 1984	Nonflammable Gas	-	1,2	1,2	Slow 'away from' living quarters
	Trisobutyl aluminum	4.2	UN 1930	Spontaneously Combustible	I	1	1	
	Trimethylaluminum. See Aluminum trimethyl							
	Trimethylamine, anhydrous	2.1	UN 1083	Flammable Gas, Poison Gas	-	1	5	Slow 'away from' living quarters
	Trimethylamine, aqueous solutions containing not more than 30% of trimethylamine	3.2	UN 1297	Flammable Liquid	II	1,2	1	Slow 'away from' mercury and its compounds
	Trimethylchlorosilane	3.2	UN 1298	Flammable Liquid, Corrosive	I	1,2	1	
	Trimethylcyclohexylamine	8	UN 2326	Corrosive	III	1,2	1,2	Glass carboys prohibited on passenger vessels
	3,3,4-Trimethylhexamethylene diamine	8	UN 2327	Corrosive	III	1,2	1,2	Glass carboys prohibited on passenger vessels
	Trimethylhexamethylene diisocyanate	6.1	UN 2328	Poison	II	1,2	1	
	Trinitrobenzene, wetted with not less than 10% of water	4.1	UN 1354	Flammable Solid	I	1	5	Slow 'away from' heavy metals and their compounds
	Trinitrobenzoic acid, wetted with not less than 10% of water	4.1	UN 1355	Flammable Solid	I	1	5	Slow 'away from' heavy metals and their compounds
	Trinitrophenol, wetted. See Picric acid, wetted							
	Trinitrotoluene, wetted with not less than 10% of water	4.1	UN 1356	Flammable Solid	I	1	5	Slow 'away from' heavy metals and their compounds
	Tripropylene	3.2	UN 2057	Flammable Solid	I	1	5	
	Tri-(1-aziridinyl)phosphine oxide, solution	3.3	UN 2057	Flammable Liquid	II	1,2	1	
	Tungsten hexafluoride	6.1	UN 2501	Poison	II	1,2	1,2	
	Turpenitine	2.3	UN 2196	Poison Gas	-	1,2	1,2	
	Turpentine substitute	3.3	UN 1299	Flammable Liquid	III	1,2	1	Slow 'away from' living quarters
	UDM H. See Dimethylhydrazine, unsymmetrical							
	Urea hydrogen peroxide	5.1	UN 1511	Oxidizer	III	1,2	1,2	
	Urea nitrate, wetted with not less than 10% of water	4.1	UN 1357	Flammable Solid	I	1,2	1,2	Keep dry. Shade from radiant heat
	Valeraldehyde	3.2	UN 2058	Flammable Liquid	II	1,2	1	
	Valeryl chlorides	8	UN 2502	Corrosive	II	1	1	Keep dry

172.102 Optional Hazardous Materials Table (Cont'd)

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(1) Notes and Symbols	(2) Hazardous Materials Description and Proper Shipping Names	IMCO Class	Identifi- cation Number	Label(s) required	Packaging Group	(7) Vessel Stowage Requirements		
						(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Vanadium oxytrichloride	8	UN 2443	Corrosive	II	I	1	Keep dry. Stow 'away from' organic compounds
	Vanadium pentoxide, non-fused form	6.1	UN 2862	Poison	II	1,2	1,2	
	Vanadium tetrachloride	8	UN 2444	Corrosive	I	1	1	Keep dry. Glass carboys prohibited on passenger vessels
	Vanadium trichloride	8	UN 2475	Corrosive	III	1,2	1,2	Keep dry
	Vanadium trioxide, non-fused form	6.1	UN 2860	Poison	II	1,2	1,2	
	Varnish. See Paints, etc.							
	Vinyl acetate, inhibited	3.2	UN 1301	Flammable Liquid	II	1,2	1	
	Vinyl bromide, inhibited	2.1	UN 1085	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Vinyl chloride, inhibited	2.1	UN 1086	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Vinyl ethyl ether, inhibited	3.1	UN 1302	Flammable Liquid	I	1,3	5	Keep cool
	Vinyl fluoride, inhibited	2.1	UN 1860	Flammable Gas	-	1,2	1	Stow 'away from' living quarters
	Vinyl isobutyl ether, inhibited	3.2	UN 1304	Flammable Liquid	II	1,2	1	Stow 'away from' living quarters
	Vinyl methyl ether, inhibited	2.1	UN 1087	Flammable Gas	II	1,2	1	Stow 'away from' living quarters
	Vinyl trichlorosilane, inhibited	3.2	UN 1305	Flammable Liquid, Corrosive	I	1,2	1	
	Water-gas	2.1	(UN 1933)	Flammable Gas, Poison Gas	(UN 1953)	1	5	Stow 'away from' living quarters
	White asbestos. See Asbestos, white							
	White phosphorus, dry. See Phosphorus, white or yellow, dry							
	White phosphorus, wet. See Phosphorus, white or yellow, in water							
	Wood alcohol. See Methanol							
	Wool waste, wet	4.2	UN 1387	Spontaneously Combustible	III	1,2	1,2	
	Xenon	2.2	UN 2036	Nonflammable Gas	-	1,2	1,2	
	Xylenes	3.2	UN 1307	Flammable Liquid	II	1,2	1	
	Xylenols	3.3	UN 1307	Flammable Liquid	II	1,2	1,2	
	Xylydines	6.1	UN 2261	Poison	II	1,2	1,2	
	Xylo. See Xylenes	6.1	UN 1711	Poison	II	1,2	1,2	Stow 'away from' acids
	Xylyl bromide	6.1	UN 1701	Poison	II	1	5	
	Yellow phosphorus, dry. See Phosphorus, white or yellow, dry							
	Yellow phosphorus, wet. See Phosphorus, white or yellow, in water							
	Zinc arsenate and arsenite, solid mixtures	6.1	UN 1712	Poison	II	1,2	1,2	
	Zinc ashes	4.3	UN 1435	Dangerous When Wet	III	1,2	1,2	
	Zinc chlorate	5.1	UN 1513	Oxidizer	II	1,2	1,2	
	Zinc chloride, anhydrous	8	UN 2337	Corrosive	III	1,2	1,2	Stow 'away from' powdered metals, 'separate from' ammonium compounds, Keep dry
	Zinc chloride, solution	8	UN 1840	Corrosive	III	1,2	1,2	
	Zinc cyanide	6.1	UN 1713	Poison	I	1,2	1,2	Stow 'away from' acids
	Zinc dithionite	9 -	UN 1931	None	III	1,2	1,2	Keep dry. Stow 'away from' acids
	Zinc ethyl. See Diethylzinc							
	Zinc nitrate	5.1	UN 1514	Oxidizer	II	1,2	1,2	
	Zinc permanganate	5.1	UN 1515	Oxidizer	II	1,2	1,2	Stow 'separate from' ammonium compounds and hydrogen peroxide
	Zinc peroxide	5.1	UN 1516	Oxidizer	II	1,2	1,2	Keep dry
	Zinc phosphide	6.1	UN 1714	Poison, Dangerous When Wet	II	1,2	1,2	Stow 'away from' acids and oxidizers
	Zinc, powder or dust, non-pyrophoric	4.3	UN 1436	Dangerous When Wet	II	1,2	1,2	
	Zinc, powder or dust, pyrophoric. See Pyrophoric metals							
	Zirconium hydride							
	Zirconium, metal, dry, coiled wire, finished metal sheets, strip (thinner than 18 microns)	4.1	UN 1437	Flammable Solid	II	1,2	5	
	Zirconium, metal, dry coiled wire or finished metal sheets, strip (thinner than 254 microns but not thinner than 18 microns)	4.2	UN 2009	Spontaneously Combustible	III	1	5	
	Zirconium, metal, dry, powder or sponge	4.1	(UN 1325)	Flammable Solid	-	1,2	1,2	
	Zirconium metal powder, dry	4.2	UN 2008	Spontaneously Combustible	II	1	5	
	Zirconium metal powder, wet with not less than 25% water (a visible excess of water must be present)	4.1	UN 1358	Spontaneously Combustible	II	1,2	5	
	Zirconium picramate, wetted with not less than 20% of water	5.1	UN 1517	Oxidizer	I	1	5	
	Zirconium, scrap	4.2	UN 1932	Spontaneously Combustible	III	1	5	Stow 'away from' heavy metals and their salts
	Zirconium, suspended in flammable liquid	3.1	UN 1308	Flammable Liquid	II	1	5	
	Zirconium tetrachloride	8	UN 2503	Corrosive	III	1,2	1,2	Keep cool Keep dry

6. § 172.201 paragraph (a)(4)(i) would be revised to read as follows:

§ 172.201 General entries.

(a) * * *

(4) * * *

(i) When appropriate, the entries "IMCO" or "IMCO Class" may be entered immediately before or immediately following the class entry in the basic description.

PART 176—CARRIAGE BY VESSEL

7. In § 176.11 paragraph (f) would be added to read as follows:

§ 176.11 Exceptions.

(f) The stowage requirements of § 172.101 of this subchapter notwithstanding, a hazardous material, which is classed, labeled and described in accordance with § 172.102 may be stowed as provided in that section.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53, App. A to Part 1, and paragraph (a)(4) of App. A, Part 106).

Note.—The Materials Transportation Bureau has determined that this proposed regulation will not have a major economic impact under the terms of Executive Order 12044 and DOT implementing procedures (43 FR 9582) nor an environmental impact which would require the preparation of an environmental impact statement under the National Environmental Policy Act (49 U.S.C. 4321 et seq.). A regulatory evaluation is available for review in the Docket.

Issued in Washington, D.C. on July 12, 1979.
Alan I. Roberts,

Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau.

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