

March 1, 2004



U.S. Department
of Transportation

400 Seventh Street, S.W.
Washington, D.C. 20590

**Research and
Special Programs
Administration**

DOT-E 7731
(TENTH REVISION)

EXPIRATION DATE: January 31, 2006

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Chart Industries, Inc.
Storage Systems Division
New Prague, MN
2. PURPOSE AND LIMITATIONS:
 - a. This exemption authorizes the manufacture, mark, sale and use of super-insulated portable tanks for use in the transportation in commerce of certain Division 2.2 gases. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
 - b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 172.203(a) in that marking the exemption number on the shipping paper is waived; and §§ 173.318, 173.320, 176.30, 176.76(g) and 177.840 in that a non-DOT specification portable tank is not authorized except as specified herein.

5. BASIS: This exemption is based on the application of Chart Industries, Inc. dated December 8, 2003, submitted in accordance with § 107.109.
6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identification Number	Packing Group
Helium, refrigerated liquid (<i>cryogenic liquid</i>)	2.2	UN1963	N/A
Nitrogen, refrigerated liquid (<i>cryogenic liquid</i>)	2.2	UN1977	N/A

7. SAFETY CONTROL MEASURES: Packaging prescribed is a non-DOT specification portable tank designed and constructed in accordance with Section VIII of the ASME Code and subparagraphs a or b of this paragraph. The portable tank is enclosed in an ISO type frame. The portable tank is vacuum-insulated with a supplemental liquid nitrogen shield. Design pressure is 90 psig, 65 psig or 63 psig for the internal tank. Design temperature is -452 degrees F., for the inner tank and any part, valve or fitting that may come in contact with the lading; and -320 degrees F., for the liquid nitrogen tank and any part, valve or fitting that may come in contact with liquid nitrogen. Water capacity is 11,000 gallons nominal for the inner tank. Tank material is SA 240 Type 304 stainless steel for the inner tank and for the nitrogen tank; and SA 36 or ASTM A 283 or equivalent steel for the outer jacket.

a. Each portable tank must conform to the drawings, calculations and design data shown below, on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). No new construction is authorized unless the design conforms with subparagraph 7.b. of this exemption.

Design Pressure(MAWP)	90 PSIG	63 PSIG	65 PSIG
General Arrangement	L-13428	L-13428	D-26904
Frame Assembly	L-13560	L-13560	D-26790
Nitrogen Tank	L-13651, L-16487 or D-16488	L-13651, L-16487 or D-16488	D-26582

Inner, Outer and Shield Assembly	D-16256 or L-13567	D-16256 or L-13567	D-26763
Inner Tank Assembly	D-18056	D-15927	D-26426
Inner tank and Shield Assembly	D-16500	D-16500	D-26763

b. New construction after July 31, 1987, must conform with the design data in paragraph 7.a. and § 178.338 except as follows.

- (1) Impact testing is not required.
- (2) Section 178.338-10 does not apply.
- (3) The portable tank need not conform with § 178.338-13(b) and (c). Lifting lugs, framework and any anchoring to the inner tank, the nitrogen shield tank or the tank jacket must conform with § 178.338-13(a). A portable tank that meets the definition of "container" must meet the requirements of 49 CFR Parts 450 thru 453, and each design must be qualified in accordance with § 178.270-13(c).
- (4) "DOT-E 7731" must replace the mark "MC 338".

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, may reoffer it for transportation provided no modifications or changes are made to the package and it is offered for transportation in conformance with this exemption and the HMR.

c. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this exemption must be either (1) marked with the name of the manufacturer and location (city and state) of the facility

at which it is manufactured or (2) marked with a registration symbol designated by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

e. A current copy of this exemption must be maintained at each facility where the package is manufactured under this exemption. It must be made available to a DOT representative upon request.

f. Each portable tank must be reinspected and retested at a pressure of 14.7 psig plus one and one-fourth times the sum of the design pressure plus the static head, once every 5 years in accordance with § 173.32(e) as prescribed for DOT 51 specification portable tanks.

g. Each portable tank must be plainly marked on both sides near the middle in letters at least 2 inches high on a contrasting background, "DOT-E 7731".

h. Each portable tank must be prepared and shipped as required in § 173.318, as applicable for the lading.

i. Shipments by cargo vessel must conform with the following:

(1) The package must conform with § 176.76(h).
The portable tank may not be overstowed with other containers or freight.

(2) The legend "One-Way Travel Time (or OWTT) _____ Hours" must be marked on the shipping paper and on the dangerous cargo manifest immediately after the container description. The OWTT is determined by the formula:

$$\text{OWTT} = \text{MRHT} - 24 \text{ hours.}$$

(3) A written record of the portable tank's pressure and ambient (outside) temperature at the following times must be prepared for each shipment.

(i) At the start of each trip;

(ii) Immediately before and after any manual venting;

(iii) At least every 24 hours; and

(iv) At the destination point.

(4) Any lading road relief valve set at a pressure lower than that prescribed for the (safety) pressure relief valve must be closed during transportation by cargo vessel.

j. No person may transport a charged portable tank unless the pressure of the lading is equal to or less than that used to determine the marked rated holding time and the OWTT is equal to or greater than the elapsed time between the start and termination of travel.

k. The actual holding time for each tank must be determined after each shipment. If it is determined that the actual holding time is less than 90 percent of the MRHT of the tank, the tank may not be refilled until it is restored to its MRHT or the tank is remarked with the reduced holding time determined by this examination.

9. MODES OF TRANSPORTATION AUTHORIZED: Cargo vessel and motor vehicle.
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel or motor vehicle used to transport packages covered by this exemption.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
 - o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
 - o Persons operating under the terms of this exemption must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
 - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must also inform the AAHMS, in writing, as soon as practicable of any incidents involving the package and shipments made under this exemption.

Issued in Washington, D.C.



for Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.
Attention: DHM-31.

Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at <http://hazmat.dot.gov/exemptions> Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: AM