U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

MAY 1 1 2004

DOT-E 5643
(EIGHTH REVISION)

EXPIRATION DATE: April 30, 2006

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Praxair, Inc.
Danbury, CT

2. PURPOSE AND LIMITATION:

a. This exemption authorizes the transportation in commerce of helium, refrigerated liquid, in a non-DOT specification portable tank. 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 §§ 173.32 and 173.318, in that a non-DOT specification portable tank is not authorized, except as specified herein; and 178.338.

5. BASIS: This exemption is based on the application of Praxair, Inc. dated April 26, 2004, submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

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

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is an insulated, non-DOT specification portable tank designed and constructed in accordance with Section VIII of the ASME Code, and with subparagraphs (1) or (2), as appropriate, of this paragraph. The portable tank is skid mounted, or enclosed in an ISO-type frame. The portable tank is vacuum insulated. Design pressure is 75 psig for the internal tank. Design temperature is -452°F for the inner tank and any part, valve or fitting that may come in contact with the lading. Water capacity for the inner tank is 3,630 gallons, nominal. Tank material is SA-240 Type 304 or 304L stainless steel for the inner tank; and SA 36, ASTM A 283 or equivalent steel for the outer jacket.

(1) Each portable tank constructed on or before December 31, 1987, must conform to Union Carbide Corporation's specification LSHe-12000, dated June 5, 1967, and related drawings on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). No new construction is authorized after July 31, 1988.

(2) Each portable tank constructed after December 31, 1987 must conform with § 178.338, except as provided in this subparagraph. Corresponding drawings and calculations must be submitted to the OHMEA prior to first shipment.

(i) § 178.338-10 does not apply.

(ii) The portable tank need not comply with § 178.338-13(a) and (b). Lifting lugs, framework and any anchoring to the inner tank, the nitrogen shield tank or the tank jacket must conform with § 178.337-3. A portable tank that meets the definition of "container" in § 450.3(a)(3) must

meet the requirements of 49 CFR Parts 450 through 453, and each design must be qualified in accordance with § 178.270-13(c).

(iii) The marking "DOT-E 5643" must replace the mark "MC 338" on the required specification plate.

b. TESTING - Each portable tank must be reinspected and retested once every five years in accordance with § 173.32(e) as prescribed for DOT Specification 51 portable tanks. The test pressure of the inner tank must be determined from the following formulas--

(1) If there is no vacuum in the outer jacket during the test:

$$P_T = 14.7 + [1.25 \times (P_d + H_S)]; \text{ or}$$

(2) If vacuum exists in the outer jacket during the test:

$$P_T = 1.25 \times [P_d + H_S]$$

where--

P_T = Test pressure (psig)

P_d = Design pressure (maximum allowable working pressure) (psig)

H_s = Static head of liquid in inner tank (psig).

8. SPECIAL PROVISIONS:

a. Each portable tank must be plainly marked "DOT-E 5643" on both sides near the middle, in letters at least two (2) inches high on a contrasting background.

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

c. 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.

d. 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.

e. The release of contents is not a reportable incident if the release is through a pressure controlling device set at 25 psig or less during shipments by motor vehicle and rail freight.

f. A person who is not a holder of this exemption who receives a package covered by this exemption may reoffer it for transportation provided no modification or change is made to the package or its contents and it is reoffered for transportation in conformance with this exemption and the HMR.

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

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle and cargo vessel.

10. MODAL REQUIREMENTS:

a. A current copy of this exemption must be carried aboard each motor vehicle and cargo vessel used to transport packages covered by this exemption.

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

(1) The package must conform to § 176.76(g). Portable tanks may not be over-stowed with other containers or freight.

2) The legend "One-Way Travel Time _____ Hours" (or "OWTT _____ Hours") must be included on the shipping paper and on the dangerous cargo manifest immediately after the entry otherwise required for the shipment. The OWTT is determined by the formula:

OWTT = MRHT - 24 hours.

(3) For each shipment, a written record must be prepared of the portable tank's pressure and the ambient (outside) temperature at the following times:

(i) At the start of each trip;

(ii) Immediately before and after any manual venting;

(iii) At least once 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.

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:

- All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- 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.
- 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 inform the AAHMS, in writing, of any incident involving the package and shipments made under the terms of this exemption.

Issued in Washington, D.C.:

MAY 1 1 2004
(DATE)

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.

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