



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

OCT 12 2004

DOT-E 10146
(SIXTH REVISION)

EXPIRATION DATE: September 30, 2006

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: L'Air Liquide, Sassenage, France
(U.S. Agent: Air Liquide America L.P., Houston
Texas)
2. PURPOSE AND LIMITATIONS:
 - a. This exemption authorizes the manufacture, mark, sale and use of a vacuum-insulated non-DOT specification portable tank for the shipment of Helium, refrigerated liquid. This exemption provides no relief from any Hazardous Materials Regulation (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: §§ 173.318 and 176.76(g)(1) in that a non-DOT specification packaging is not authorized except as specified herein.
5. BASIS: This exemption is based on the application of L'Air Liquide dated September 27, 2004, submitted in accordance with § 107.109.

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6. HAZARDOUS MATERIALS (49 CFR § 172.101):

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

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a non-DOT specification portable tank designed and constructed in accordance with Section VIII of the ASME Code and as follows. The portable tank is enclosed in an ISO type frame. The portable tank is vacuum-insulated and equipped with a supplemental liquid nitrogen shield. Design pressure is 94 PSIG for the internal tank, and 7 PSIG for the liquid nitrogen tank. Design temperature is -452°F for the inner tank and any part, valve or fitting that may come in contact with the lading; and -320°F for the liquid nitrogen tank and any part, valve or fitting that may come in contact with liquid nitrogen. Water capacity for the inner tank is 11,000 gallons nominal, and 397 gallons for the liquid nitrogen tank. Tank material is Type 304 SA 240, SA 312, SA 697, SA 782 or equivalent austenitic stainless steel for the inner tank and the nitrogen tank; and SA 36, ASTM A 283 or equivalent carbon steel for the outer jacket. Each portable tank must be in accordance with L'Air Liquide's drawings 647-03818-LA1111, 647-03818-MA1001, 647-03818-IA0111, 647-03818-JA001, 647-03818-EA0111, 647-03818-FA001, and must conform with § 178.338, except as follows:

- (1) Impact testing is not required for Type 304 austenitic stainless steels, except when such materials are used for tanks used in cryogenic helium service.
- (2) Sections 178.338-10 and 178.338-13(b) and (c) do not apply.
- (3) Lifting lugs, framework and any anchoring to the inner tank, the nitrogen tank or the tank jacket must conform with § 178.338-13(a). A portable tank that meets the definition of "container" in 49 CFR 450(a)(2)

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

(4) The marking "DOT-E 10146" must replace "MC 338" on the nameplate specified in § 178.338-18(a).

b. TESTING - Each portable tank must be reinspected and retested once every 5 years in accordance with § 180.605 as prescribed for DOT 51 Specification portable tanks at a pressure in PSIG of 1.25 times the sum of the design pressure, the static head and 14.7. If the inner tank is under vacuum during the test, the outside pressure gauge must read 14.7 psi less than the test pressure calculated above.

c. OPERATIONAL CONTROLS -

(1) Each portable tank must be plainly marked on both sides near the middle, in letters at least two (2) inches high on a contrasting background "DOT-E 10146".

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

(3) 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 (MRHT) and the OWTT is equal to or greater than the elapsed time between the start and termination of travel.

(4) 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.

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.

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 cargo vessel or motor vehicle used to transport packages covered by this exemption.

b. 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 and 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.

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- (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 (pressure control) valve (PCV) set at a pressure lower than that prescribed for the (safety) pressure relief valve must be closed during transportation by cargo vessel, unless the OWTT is determined based on the setting of the PCV.

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.

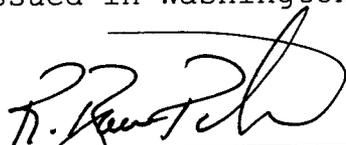
No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS:

a. 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.

b. The loss of helium contents is not a reportable incident if the release is through a pressure control valve set-to-discharge at 25 PSIG or less during shipments by motor vehicle.

Issued in Washington, D.C.:



Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

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(DATE)

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: PTO/sln