U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

DOT-E 8758
(FIRST REVISION)

1. Union Carbide Corporation, Linde Division, Tarrytown, New York, is hereby granted an exemption from those provisions of this Department's Hazardous Materials Regulations specified in paragraph 5 below to manufacture, mark and sell the packaging described in paragraph 7 below for use of the transportation of certain nonflammable gases described in paragraph 3 below in commerce subject to the requirements specified herein. This exemption authorizes the use of non-DOT specification portable tanks, and provides no relief from any regulation other than as specifically stated.

2. BASIS. This exemption is based on Union Carbide Corporation's application dated October 31, 1983, submitted in accordance with 49 CFR 107.105 and the public proceeding thereon.

3. HAZARDOUS MATERIALS (Descriptor and class). Liquid nitrogen, liquid oxygen, liquid argon in portable tanks equipped with road relief valves set to discharge at 25 psig for use after filling and 250 psig for use after first unloading; classed as nonflammable gas.

4. PROPER SHIPPING NAME (49 CFR 172.101). Nitrogen, refrigerated liquid; oxygen, refrigerated liquid; or argon, refrigerated liquid; as appropriate.

5. REGULATION AFFECTED. 49 CFR 173.318(a).

6. MODE OF TRANSPORTATION AUTHORIZED. Motor vehicle.

7. SAFETY CONTROL MEASURES. Packaging prescribed is a non-DOT specification portable tank consisting of a skid mounted vacuum insulated tank designed and constructed in accordance with Section VIII of the ASME Code for a design pressure of 275 psig and a design temperature of -320°F, and in accordance with the following.

Model Number	LTM 1200	LTM 1600	LTM 2000	LTM 2400	LTM 2800
Tank manufacturer	Linde Div of Union Carbide				
Inner tank material	SA 353 or SA 553 Type 1, 9% Nickel steel				
Inner tank water capacity	1290 gal.	1670 gal.	2100 gal.	2525 gal.	3010 gal.
Outer jacket material	SA 283 Carbon steel or ASTM 606 or 607 Alloy steel				
Pressure relief valve (PRV) Setting	275 psig				
PRV relief capacity - SCFM Air	236				
Frangible disc (FD) Burst	400 psig				
FD relief capacity - SCFM Air	3700				
General Arrangement Drawing	C-2099846 dated September 1, 1981				

a. For a portable tank used to transport oxygen, the insulation may not sustain combustion in a 99.5 percent oxygen atmosphere at atmospheric pressure when contacted with a continuously heated glowing platinum wire. A portable tank which is so insulated must be marked, "INSULATION FOR OXYGEN SERVICE" when it is used to transport oxygen.

b. A portable tank constructed for oxygen service must be thoroughly cleaned to remove all foreign material in accordance with CGA Pamphlet G 4.1. All loose particles from fabrication such as weld beads, dirt, grinding wheel debris, and other loose contaminants must be removed prior to final closure of the manway or the tank. Chemical or solvent cleaning with a material compatible with the intended lading must be performed to remove any contaminants likely to react with the lading.

c. Any valve or fitting with moving or abrading parts or piping that may come in contact with oxygen may not be made of aluminum.

d. Each tank must be filled to allow at least 2 percent outage below the inlet of the controlling pressure relief valve under conditions of incipient opening of this valve with the tank in a level attitude not to exceed the following. The tank must be weighed prior to dispatch and must comply with the outage required.

Controlling valves set-to discharge pressure	Filling density - % by weight		
	Argon	Nitrogen	Oxygen
25 psig	129.6	74.5	105.5
250 psig	106.0	57.0	87.0

e. Each tank must be protected by at least one pressure relief valve and at least one frangible disc arranged to discharge upward and unobstructed to the outside of the housing. Road relief valves set at 25 psig arranged to discharge as the pressure relief devices are authorized.

f. The tank must be tested at 1-1/2 times the sum of the design pressure plus 14.7 plus the static head prior to initial shipment.

8. SPECIAL PROVISIONS.

a. Shippers may use the packagings covered by this exemption pursuant to 49 CFR 173.22a.

b. A copy of this exemption must be carried aboard each motor vehicle used to transport packages covered by this exemption.

c. 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 8758". Each portable tank used in oxygen service must be marked "One Way Travel Time _____ Hours" near the DOT-E 8758 marking in letters at least 2 inches high.

d. A holding time test must be performed with the tank charged with the intended commodity at the maximum loading temperature to be used in service and to a filling density corresponding to a 2 percent outage at the pressure level of the lowest setting on the pressure relieving devices. The equilibrium pressures and ambient temperatures must be recorded at 3-hour intervals until the desired

pressure is reached or until the pressure level of the contents reaches the pressure at which the lowest pressure relieving device is set to open. The time lapse recorded must be adjusted to the equivalent time lapse for an ambient temperature of 85°F to establish the "Rated Holding Time" (RHT). This rated holding time must be stamped on the jacket nameplate. Holding time test must be performed on a least one tank out of each design or model number. This test may be done in conjunction with an actual shipment. Test data obtained from one of the above commodities may be used to establish the holding time for any of the other authorized commodities. The holding time stamped on the jacket name plate (marked rated holding time - MRHT) may be equal to or less than the established RHT. The one way travel time (OWTT) is determined by the formula:

$$OWTT = \frac{MRHT - 24}{2}; \text{ for MRHT less than 72 hours}$$

or; $OWTT = MRHT - 48$; for MRHT of 72 hours or more.

e. Each tank must be reinspected and retested once every 5 years in accordance with 49 CFR 173.32(e) as prescribed for DOT specification 51 portable tanks at one and one-fourth times the sum of the design pressure plus 14.7 plus static head.

f. Postweld heat treatment of inner tank is not required.

9. REPORTING REQUIREMENTS. Any incident involving loss of contents of the package must reported to the OHMR as soon as practicable. The release of a material covered by this exemption is not a reportable incident if the release is through a pressure controlling device or pressure relief device.

10. EXPIRATION DATE. December 31, 1985.

Issued at Washington, D.C.:

Joseph T. Horning

for Alan I. Roberts
Associate Director for
Hazardous Materials Regulation
Materials Transportation Bureau

AUG 23 1984

(DATE)

Address all inquiries to: Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, Research and Special Programs Administration, U.S. Department of Transportation, Washington, D.C. 20590. Attention: Exemptions Branch.

Dist: FHWA.