U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

**DOCKETS UNIT
(202)366-5046 BUS.
(202366-3753 FAX**

**CYLINDERS 3-AL
SEE LIST BELOW**

**D.O.T.E- 6498
7042
8107
8364
8422
6616
6668
8404**

**SEE SECTION 173.23
49 CFR CODE OF REGULATIONS**

§ 173.23 Previously authorized packaging.

(a) When the regulations specify a packaging with a specification marking prefix of "DOT," a packaging marked prior to January 1, 1970, with the prefix of "ICC" may be used in its place if the packaging otherwise conforms to applicable specification requirements.

(b) [Reserved]

(c) After July 2, 1982, a seamless aluminum cylinder manufactured in conformance with and for use under DOT exemption E 6498, E 7042, E 8107, E 8364, or E 8422, may be continued in use if marked before or at the time of the next retest with the specification identification "3AL" immediately above the exemption number, or the DOT mark (e.g., DOT 3AL 1800) is added in proximity to the exemption marking.

(d) Cylinders (spheres) manufactured and marked DOT-E 6616 prior to January 1, 1983, may be continued in use if marked before or at the time of the next retest with the specification identification "4BA" near the exemption marking.

(e) After October 1, 1984, cylinders manufactured for use under exemptions DOT E-6668 or E-8404 may be continued in use, and must be marked "DOT-4LXXXYY" (XXX to be replaced by the service pressure, YY to be replaced by the letters "AL", if applicable) in compliance with Specification 4L (§ 178.57 of this subchapter) on or before January 1, 1986. The "DOT-4LXXXYY" must appear in proximity to other required specification markings.

(f) An MC 331 cargo tank motor vehicle must conform to structural integrity requirements in § 178.337-3 or to corresponding requirements in effect at the time of manufacture.

(g) A non-bulk packaging manufactured, tested, marked, and certified on or before September 30, 1996, in accordance with the applicable provisions of subparts L and M of part 178 of this subchapter in effect on September 30, 1995, may be used as authorized by this subchapter if the packaging conforms to all requirements applicable at the time of manufacture. In addition, such a packaging may be reused as authorized by § 173.28 without a nominal thickness marking, if it conforms to the minimum thickness criteria prescribed in § 173.28(b)(4).

[Amdt. 173-3, 33 FR 14921, Oct. 4, 1968, as amended by Amdt. 173-94; 41 FR 16063, Apr. 15, 1976; Amdt. 173-152, 47 FR 26633, June 21, 1982; Amdt. 173-16, 48 FR 50460, Nov. 1, 1983; Amdt. 173-176, 49 FR 24689, June 14, 1984; Amdt. 173-180, 49 FR 42735, Oct. 24, 1984; Amdt. 173-224, 55 FR 52610, Dec. 21, 1990; 57 FR 45460, Oct. 1, 1992; Amdt. 173-240, 60 FR 17400, Apr. 5, 1995; Amdt. 173-242, 60 FR 26805, May 18, 1995]

DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
WASHINGTON, D.C. 20591

DOT-E 6498
(SECOND REVISION)

1. Luxfer USA, Limited, Riverside, California, 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 prescribed in paragraph 7 below for use in transportation in commerce of certain liquefied and nonliquefied compressed gases and certain other hazardous materials described in paragraph 3 below subject to the limitations and special requirements specified herein. This exemption authorizes the use of non-DOT specification aluminum cylinders, and provides no relief from any regulation other than as specifically stated.

2. BASIS. This exemption is based on Luxfer USA, Limited's petition dated February 3, 1978, submitted in accordance with 49 CFR 107.105 and the public proceeding thereon.

3. HAZARDOUS MATERIALS (Descriptor and class).

a. Air, compressed; argon; carbon dioxide; helium; nitrogen; nitrous oxide; and oxygen, classed as nonflammable gases.

1. For cylinders charged with oxygen, the following applies:

i. Pressure in the container must not exceed 3000 psig at 70°F.

ii. Cylinder threads must be straight threads. Tapered threads are not authorized.

iii. Brass valves only are authorized.

iv. Each cylinder must be cleaned in compliance with requirements of Federal Specification RR-C-901b dated August 1, 1967, paragraph 3.8.2. One cylinder selected at random from each lot of 200 or less must be tested as prescribed in RR-C-901b, paragraph 4.4.2.3 and meet the standard of cleanliness specified.

b. Any other flammable or nonflammable, liquefied or nonliquefied compressed gas for which DOT-3A or DOT-3AA cylinder is prescribed in 49 CFR Part 173 contingent on compatibility of commodity with materials of construction.

c. Class A poisons specifically identified to, and acknowledged in writing by, the Office of Hazardous Materials Regulation (OHMR) prior to the first shipment.

d. Any other hazardous material specifically identified to, and acknowledged in writing by, the OHMR prior to the first shipment.

4. PROPER SHIPPING NAME (49 CFR 172.101). The specific commodity name, or generic description, as appropriate.

5. REGULATION AFFECTED. 49 CFR 173.302(a)(1), 173.304(a)(1) and (d)(3), 173.336(a)(2), 173.337(a)(1), 175.3.

6. MODES OF TRANSPORTATION AUTHORIZED. Motor vehicle, rail freight, cargo vessel, passenger-carrying aircraft (limited to emergency/rescue aircraft), cargo-only aircraft, except as specifically provided in paragraphs 8(g) and 8(h).

7. SAFETY CONTROL MEASURES. Packaging prescribed is a non-DOT specification seamless high pressure cylinder made of aluminum alloy designated 6351-T6 by the Aluminum Association. Each cylinder must be constructed in accordance with the proposed specification for aluminum cylinders set forth in the Compressed Gas Association Docket 71-6 dated September 1975, with the following exceptions:

178.XX-3

(a) * * * chemical analysis and tests as specified to be made within the limits of the United States of America.

178.XX-5

(a) Only 6351-T6 alloy with a minimum elongation of 14 percent in a 2 inch or 4D specimen is authorized.

178.XX-8

(c) * * * the dish radius is no greater that 1.2 times the inside diameter of the shell. The knuckle radius must not be less than 12 percent of the inside diameter of the shell.

178.XX-10

(b) Calculations must be made by the formula:

$$S = \frac{P(1.3D^2+0.4d^2)}{D^2 - d^2}$$

where:

S = wall stress in psi
P = minimum test pressure prescribed
D = outside diameter in inches
d = inside diameter in inches

178.XX-11

(b) * * * failure must not occur at less than 2.5 times the marked service pressure.

178.XX-16

(b) Cylinder must withstand flattening to 9 times wall thickness without cracking. Flattening to continue until cracking occurs and this point recorded on the report. Any cracks must be longitudinal to the longitudinal axis of the cylinder.

178.XX-19

(c) * * *
(1) *DOT-E 6498 followed by the service pressure.*

8. SPECIAL PROVISIONS.

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

b. A copy of this exemption must be carried aboard each vessel and aircraft used to transport packages covered by this exemption.

c. Each cylinder must be retested at least every five years as prescribed in 49 CFR 173.34(e) for DOT Specification 3AA cylinders, except that a cylinder condemned for excessive permanent expansion may not be reheat treated.

d. A cylinder which has been subjected to the action of fire must not again be placed in service.

e. Packages specified herein that were marked "DOT SP 6498" prior to August 31, 1976, may be transported under the terms of this exemption.

f. Cylinders containing Class A poisons are further subject to the following:

(1) must be designed and marked for a service pressure of 1800 psi or higher.

(2) are limited to a charge pressure of not more than 750 psi at 70°F.

(3) Water capacity must not exceed 125 pounds.

(4) The requirements of §173.327 are applicable.

g. Flammable compressed gases and Class A poisons are not acceptable for transportation by cargo vessel or passenger-carrying aircraft; nor may class A poisons be transported aboard cargo-only aircraft.

h. Only cylinders charged with oxygen or air that are strapped or permanently installed in rescue/emergency passenger-carrying aircraft are authorized under this exemption.

9. REPORTING REQUIREMENTS. Any incident involving loss of contents of the package must be reported to the OHMR as soon as practicable.

10. EXPIRATION DATE. March 30, 1980.

Issued at Washington, D.C.:

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

6-8-78
(DATE)

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

Dist: B of E, USCG FAA, FHWA, FRA