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 26305, May 18, 1995]

DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
WASHINGTON, D.C. 20590

DOT-E 7042
(FOURTH REVISION)
(SECOND CORRECTED COPY)

1. Walter Kidde and Company, Inc., Belleville, New Jersey, 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 the transportation of the various compressed gases and 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 Walter Kidde and Company, Incorporated's application dated September 20, 1978, submitted in accordance with 49 CFR 107.105 and the public proceeding thereon.

3. HAZARDOUS MATERIALS (Descriptor and class).

a. Compressed air; argon; helium; nitrogen; nitrous oxide; oxygen; liquefied carbon dioxide; bromotrifluoromethane and nitrogen mixtures; classed as nonflammable gases.

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 materials 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 non-DOT specification seamless cylinders made of aluminum alloy in accordance with Aluminum Association Alloy designated 6351-T6. Cylinders are limited to a size not to exceed 1,000 pounds water capacity and must have a service pressure of at least 150 psig. Further, cyinders must be constructed in accordance with proposed specification for aluminum cylinders set forth in Compressed Gas Association Docket 71-6, dated September of 1975, with the following exceptions:

2

178.___-3

Inspections and verifications must be performed by an independent inspection agency approved in writing by the Director, OHMR, in accordance with §173.300a of this subchapter. Chemical analyses and tests as specified must be made within the United States unless otherwise approved in writing in accordance with this subchapter.

178.___-4

(e) Add: Verify ultrasonic inspection of each lot of material by inspection or by obtaining producers certificate of ultrasonic inspection. When verified by inspection, lot shall be ultrasonically inspected in accordance with paragraph 178.___-5(b). After May 31, 1980, the following requirements apply instead:

Perform ultrasonic inspection of all material. Ultrasonic inspection to be in accordance with paragraph 178.___-5(b).

178.___-5

(a) Only aluminum alloy designation 6351 is authorized.

178.___-8

(c) *** the dish radius is no greater than 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. Until May 31, 1980, the knuckle radius may be between 10 and 12 percent of the inside diameter of the shell.

178.___-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.___-11

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

178.___-16

(b) Cylinders must withstand flattening to nine times the wall thickness without cracking. Flattening to continue until cracking occurs, and this point recorded on the report.

178.___-19

(a) * * *
1. DOT-E 7042, followed by this 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 marked "DOT-E 7042" except that packages specified herein marked "DOT SP 7042" prior to the issuance of this exemption may be transported under the terms of this exemption.

d. Each cylinder must be retested at least once every five years in accordance with 49 CFR 173.34(e)(1),(3),(4),(5) and (6), except that a cylinder condemned for excessive permanent expansion may not be reheat-treated.

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

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.

(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.

i. 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.

9. REPORTING REQUIREMENTS. Any incident involving loss of contents of the package must be reported to the Office of Hazardous Materials Regulation (OHMR) as soon as practicable.

10. EXPIRATION DATE. June 30, 1980.

Issued at Washington, D.C.:

Douglas A. Rockett 5/25/79

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

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