U.S. Department
of Transportation
**Research and
Special Programs
Administration**

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

MAY 5 2003

DOT-E 8725
(FIFTEENTH REVISION)

EXPIRATION DATE: March 31, 2005

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Structural Composites Industries
Pomona, California

2. PURPOSE AND LIMITATION:

a. This exemption authorizes the manufacture, mark and sale of non-DOT specification fiber reinforced plastic, hoop-wrapped aluminum cylinders for use in the transportation in commerce of certain non-liquefied compressed gases. 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. The safety analyses did not consider the hazards and risks associated with consumer use, use as a component of a transport vehicle or other device, or other uses not associated with transportation

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171 - 180.

4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.302a(b)(5)in that non-DOT specification cylinders are not authorized, except as specified herein.

5. BASIS: This exemption is based on the application of Structural Composites Industries dated April 2, 2003 submitted in accordance with § 107.109.

MAY 5 2003

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi-fication Number**	**Packing Group**
(a) Air, compressed; Oxygen, compressed; Helium, compressed; Nitric oxide; Argon, compressed; Nitrogen, compressed; and Carbon dioxides, and mixtures, thereof. (b) Hydrogen, compressed; Methane, compressed; Natural gas, compressed; Ethane, compressed; Propane; Silane; and mixtures thereof; and mixtures of these Division 2.1 gases with Helium compressed; Argon, compressed Nitrogen, compressed; or Carbon dioxide.	Division 2.1 or 2.2, as appropriate	As listed in § 172.101 for specific compressed gases or gas mixtures.	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a non-DOT specification fiber reinforced plastic (FRP), hoop-wrapped (HW) aluminum cylinder made in accordance with CNG Cylinder Company's data presented with their original application, and application for amendments, on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA), and in part conforming with DOT 3AL specification (§ 178.46) and in full conformance with DOT FRP-2 Standard Revision 1 dated January 4, 1987 (§ 178.BB) contained in Appendix A of this exemption except as follows:

§ 178.BB-2 Type size and service pressure.

Type 3HW cylinder consisting of resin impregnated continuous filament windings in the circumferential direction only over a seamless aluminum liner made in compliance with § 178.BB-6(a) of this exemption; not over 500 pounds water capacity; and service pressure at least 900 psi but not greater than 3,600 psi.

§ 178.BB-4 Duties of the Inspector.

(a) Determine that all material conform to the requirements in this exemption and to FRP-2 Standard, as applicable.

(b) Verify compliance of aluminum liner with § 178.BB-6(a) of this exemption. Verify compliance of filament and resin system components with the requirements specified in § 178.BB-5 of this exemption.

(c) thru (g) * * *.

§ 178.BB-5 Authorized Materials and Identification of material.

(a) Aluminum liner must be 6061 alloy of T6 temper made from extrusion, flow forming, or seamless drawn tubing.

(b) * * *

(c) Resin system must be flexible isothalic polyester type with at least 15 percent elongation at break, and at least 2000 psi tensile strength. Resin system must be tested on a sample coupon representative of the composite overwrap in accordance with ASTM D-2344-84(89) and have a minimum shear strength of 2,000 psi.

(d) and (e) * * *

§ 178.BB-6 Manufacture.

(a) Liner. Aluminum liner without overwrap must be suitable for a service pressure of at least 50 percent of the service pressure marked on the composite cylinder, and must be in full compliance with DOT 3AL specification (§ 178.46) except as follows:

MAY 5 2003

(1) * * *

(2) * * *

(3) Cylinder shell must be made from seamless tubing formed by the die and mandrel method. Spun closures are not authorized. Each end to be provided with a threaded closure. End contour to be hemispherical or ellipsoidal with a ratio of major to minor axis not exceeding two to one and with concave side to pressure.

(4) Instead of the tests prescribed in § 178.46(h) a bend test using a mandrel diameter sized to produce a minimum of 9 percent strain in the outer surface of the specimen is authorized. Calculation of the mandrel diameter must be made by the formula contained in Appendix A of the application dated December 10, 1982.

(5) In lieu of the requirement in § 178.46(i), the required test specimens may be obtained from test rings. The length of the test ring must be not less than its outside diameter. Each ring must be of the same specification material, diameter, and thickness as the finished cylinders represented. Each ring must be subjected to the same heat treatment as the finished cylinders represented. Ends of ring must be covered and arranged for heattreatment in accordance with CNG's procedure described in their letter of September 6, 1984 and February 2, 1994.

(b) thru (d) * * *

(e) * * * Cylinders designed to service pressures greater than 3000 psig must conform to the design information contained in CNG Cylinder Company's letter dated November 5, 1992, on file with the OHMEA.

MAY 5 2003

§ 178.BB-12 Destructive tests.

(a) * * *

(b) Burst test

(1) The last sentence in this paragraph is revised to read as follows: "The cylinder cycle tested in paragraph (a) above may be used for this burst test".

§ 178.BB-13 Acceptable results of tests.

(a) Hydrostatic test.

(1) * * *. Following the hydrostatic proof test the inside of each cylinder must be visually examined by suitable means. Cylinders with indication of excessive folds or cracking must be rejected.

(2) * * *

(b) * * *

(c) * * *

(1) * * *. Following the cycle test the inside of each cylinder must be visually examined by suitable means. Cylinders with indication of excessive folds, cracks, or crack-like defects must be rejected.

(2) When the lot qualification test cylinder fails to withstand the cycle test, the lot must be rejected.

(d) * * *

§ 178.BB-18 Design qualification tests.

(a) * * *

(b) * * *

(c) * * *. Instead of applying the "change in water capacity", shown in this subparagraph, to design qualification test requirements for environmental cycling and thermal cycling, the following is authorized for cylinders greater than 42 inches in length:

When a design has been qualified by environmental cycling and thermal cycling design qualification tests performed on test cylinders at least 42 inches long, further such tests are not required unless the change in length exceeds 100 percent.

(d) Pressure cycling tests.

All provisions of this subparagraph apply except:

(1) Cyclic pressurizations from zero to test pressure are not required; 27000 cycles is to be substituted wherever 10,000 cycles is specified and; 13,500 cycles is to be substituted wherever 5,000 cycles is specified.

(2) After passing this test the cylinder must pass the burst test prescribed in paragraph (e) of this section and the results of the burst test must be recorded.

(e) and (f) * * *

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 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.

f. Cylinders may not be used for underwater breathing purposes.

g. Cylinders used in oxygen service must conform with § 173.302a(b)(5)(1) through (b)(5)(4).

h. A cylinder manufactured under this exemption is not authorized 15 years from the date of manufacture.

g. Each cylinder must be reinspected and hydrostatically retested every three years in accordance with § 180.209, as prescribed for DOT 3HT specification cylinders, except that the rejection elastic expansion does not apply and the permanent volumetric expansion may not exceed 5 percent of the total volumetric expansion at test pressure. Retest dates must be stamped on the exposed metallic surface of the cylinder neck or marked on a label securely affixed to the cylinder and overcoated with epoxy near the original test date. Reheat treatment or repair of rejected cylinders is not authorized. When a hydrostatic retest is repeated as provided for in § 180.209, only two such retests are permitted.

h. No person may perform inspection and testing of cylinders subject to this exemption unless that person (1) holds a current copy of this exemption at the location of such inspection and testing, and (2) complies with all the terms and conditions of this exemption. The marking of the retester's symbol on the cylinders certifies compliance with all of the terms and conditions of this exemption.

i. A cylinder that has been subjected to fire may not be returned to service.

j. Cylinders must be packaged in accordance with § 173.301(a)(9).

k. The cylinders described in this exemption are authorized only for normal transportation as an article of commerce i.e., the movement of hazardous materials packages from consignor to consignee.

No cylinder may be transported in a partially filled condition, i.e., other than full or empty per § 173.29, unless it is equipped with a pressure relief device designed, manufactured and tested for partially filled cylinders.

l. Cylinders are authorized for manifolding. Manifolding must be in accordance with § 173.301(g).

m. Filling requirements are subject to all provisions contained in § 173.302a for DOT 3AL specification cylinders.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle.

10. MODAL REQUIREMENTS: None as a requirement of this exemption.

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.
- Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8 who performs a function subject to the 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 or apply of 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 incidents involving the package and shipments made under the terms of this exemption.

Issued in Washington, D.C.

Ann Mazzullo

Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

MAY 5 2003
(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: sln