



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

SEP 14 2004

DOT-E 7218
(TWELFTH REVISION)

EXPIRATION DATE: August 31, 2006

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Structural Composites Industries
Pomona, California
2. PURPOSE AND LIMITATIONS:
 - a. This exemption authorizes the manufacture, mark, sale and use of non-DOT specification cylinders for the transportation in commerce of certain Division 2.2 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.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302a(a)(1), 173.304a(a)(1) and 175.3 in that non-DOT specification cylinders are not authorized, except as specified herein.
5. BASIS: This exemption is based on the application of Structural Composite Industries dated August 31, 2004, submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Air, compressed	2.2	UN1002	N/A
Bromotrifluoromethane or Refrigerant gas, R 13B1	2.2	UN1009	N/A
Carbon Dioxide	2.2	UN1013	N/A
Compressed gas, n.o.s. (Bromotrifluoromethane and mixtures thereof, except that mixtures of bromotrifluoromethane with air are not authorized.	2.2	UN1956	N/A
Nitrogen, compressed	2.2	UN1066	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification fiber reinforced plastic (FRP) full composite (FC) cylinder in full compliance with Boeing Airplane Company's Technical Report No. E-8001-46602 dated November 12, 1975 on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA), and with DOT FRP-1 Standard Revision 2 dated February 15, 1987 (§ 178.AA), except as follows:

§ 178.AA-2 Type, size and service pressure.

Type 3FC cylinder consisting of resin impregnated continuous filament windings in both longitudinal and circumferential directions over a seamless aluminum liner; not over 100 pounds water capacity; and service pressure at least 900 PSI but not greater than 3000 PSI.

§ 178.AA-4 Duties of Inspector.

(a) * * *

(b) [Add] In lieu of testing for filament material properties by the exemption holder, a certificate by the filament manufacturer is acceptable provided that the procurement document specifies strength and quality requirements and that the supplied material is certified to those requirements.

§ 178.AA-5 Authorized material.

(a) Aluminum liner must be 6351 or 6061 alloy and T6 temper. Aluminum 6351 is not authorized for new construction.

(b) Filament material must be Kevlar 49 in compliance with proposed Aerospace Materials Specification (AMS) 3901. Filaments must be tested in accordance with ASTM D-2343 for strand strength, and ASTM D-3317 for Denier.

(1) Strand strength must be 450,000 psi, minimum.

(2) Denier must be at least 90 percent of the nominal value specified in AMS 3901. Denier of roving may be certified by filament manufacturer.

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§ 178.AA-6 Manufacture.

(a) * * *

(b) Applies, except that minimum autofrettage pressure of 103 percent of minimum prescribed test pressure is authorized.

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§ 178.AA-10 Pressure relief devices and protection for valves, relief devices, and other connections.

Pressure relief devices and protection for valves and other connections must be in compliance with 49 CFR 173.301(f), and 173.301(h), except that the adequacy of the pressure relieving devices for each design must be verified in accordance with 178.AA-18(g) notwithstanding the requirement in CGA Pamphlet C-14.

§ 178.AA-11 Non destructive test.

(a) * * *

(1), (2) and (3) * * *

(4) Each cylinder must be tested to at least two times the service pressure. In no case may test pressure exceed autofrettage pressure.

§ 178.AA-12 Destructive tests.

(a) * * *

(b) Applies except that the rate of cycling may not exceed 10 cycles per minute.

(c) * * *

§ 178.AA-13 Acceptable results of test.

(a) thru (c) * * *

(d) Burst test

(1) Applies except that burst pressure must be at least 3-1/3 times the service pressure.

(2) * * *

§ 178.AA-18 Design qualification tests.

(a) thru (c) * * *

(d) Applies except that the rate of cycling may not exceed 10 cycles per minute.

(e) Applies except that burst pressure must be at least 3-1/3 times the service pressure.

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b. TESTING - Each cylinder must be reinspected and hydrostatically retested every three years in accordance with § 180.209 as prescribed for DOT 3HT cylinders, except that the rejection elastic expansion criterion does not apply, permanent volumetric expansion for cylinders must not exceed 5 percent of total volumetric expansion at test pressure and retest dates must be steel stamped on the outer exposed metallic surface of the cylinder neck, or marked on a label securely affixed to the cylinder and overcoated with epoxy. Reheat treatment or repair of rejected cylinders not authorized.

c. OPERATIONAL CONTROLS -

(1) A cylinder is not authorized 15 years after the date of manufacture.

(2) Cylinders are authorized only for use as equipment components aboard aircraft or marine craft specially identified to the OHMEA.

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

(4) Cylinders subjected to action of fire must be removed from service.

(5) Maximum filling density for carbon dioxide and bromotrifluoromethane gases, must be such that the pressure in the cylinder at 130°F does not exceed 5/4 times the marked service pressure.

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.

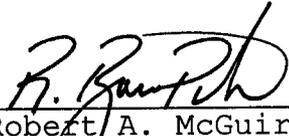
- c. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.
- d. Each packaging manufactured under the authority of this exemption must be marked with a registration symbol designated by the Office of Hazardous Materials Exemptions 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.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only, and passenger-carrying aircraft.
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel or aircraft used to transport packages covered by this exemption. The shipper must furnish a current copy of this exemption to the air carrier before or at the time the shipment is tendered.
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:+ 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.

Issued in Washington, D.C.:



Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

SEP 14 2004

(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: KFW/sln