



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

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

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DOT-E 8059
(SIXTEENTH REVISION)

EXPIRATION DATE: October 31, 2005

(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 fiber reinforced plastic (FRP) full composite cylinders for use in the transportation in commerce of certain Division 2.1 and Division 2.2 materials. This exemption provides no relief from the 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 use as a component of another device or other uses not 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) and (d), and 175.3 in that a non-DOT specification cylinder is not authorized, except as prescribed herein.

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5. BASIS: This exemption is based on the application of Structural Composites Industries dated August 25, 2003, 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 (containing up to 60% by volume oxygen)	2.2	UN1002	N/A
Argon, compressed	2.2	UN1006	N/A
Carbon dioxide	2.2	UN1013	N/A
Helium, compressed	2.2	UN1046	N/A
Hydrogen, compressed	2.1	UN1049	N/A
Methane, compressed or Natural gas, compressed (with high methane content)	2.1	UN1971	N/A
Nitrogen, compressed	2.2	UN1066	N/A
Oxygen, compressed	2.2	UN1072	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a non-DOT specification fiber reinforced plastic (FRP) full composite (FC) cylinder made in accordance with Acurex Corporation's technical data submitted with their application and EFI's application dated September 9, 1987 on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA), and conforming with DOT FRP-1 Standard, (§ 178.AA), Revision 2 dated February 15, 1997, except as follows:

§ 178.AA-4 Duties of Inspector.

* * *

(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-6 Manufacture.

(a) * * *

(b) This paragraph applies, except that certain designs specifically identified to, and on file with the OHMEA may be autofrettaged by pressurizing to not less than 103 percent of the prescribed minimum test pressure.

* * * * *

§ 178.AA-13 Acceptable results of tests.

(a) Applies except that for cylinders with 2.5 pounds (70 cubic inches) or less water capacity, the permanent expansion may not exceed 10 percent of total elastic expansion at test pressure.

§ 178.AA-18 Design qualification tests.

* * * * *

(b) Applies, except that designs using 6351 liner previously qualified under this exemption may be qualified based on acceptable results of tests on the largest capacity (with the same diameter and service pressure rating) cylinder to represent tests for smaller sized cylinders (with the same diameter and service pressure rating) cylinder. In this case, mechanical strength of 6061 alloy must be the same (within plus or minus 2-1/2 percent of mechanical properties of 6351 alloy used).

(c) Applies, except that designs using 6351 liner previously qualified under this exemption may be qualified based on acceptable results of tests on the largest capacity (with the same diameter and service pressure rating) cylinder to represent tests for smaller sized cylinders (with the same diameter

and service pressure rating). In this case, mechanical strength of 6061 alloy must be the same (within plus or minus 2-1/2 percent of mechanical properties of 6351 alloy used).

(d) * * *

(e) Not required for designs using 6061 T6 alloy with mechanical properties within plus or minus 2-1/2 percent of strength of 6351 alloy previously used.

b. TESTING - Each cylinder must be reinspected and hydrostatically retested at least once every three years in accordance with §§ 180.205 and 180.209(a), as prescribed for DOT 3HT specification cylinders except as specifically noted herein:

1. Rejection elastic expansion criteria does not apply.

2. For cylinders with 2.5 pounds or less (70 cubic inches) water capacity, the permanent volumetric expansion may not exceed 10 percent of total volumetric expansion at test pressure.

3. For cylinders greater than 2.5 pounds (70 cubic inches) water capacity, the permanent volumetric expansion may not exceed 5 percent of total volumetric expansion at test pressure.

4. Retest markings must be stamped on the exposed metallic surface of the cylinder neck or applied on a label securely affixed to the cylinder and overcoated with epoxy, near the original test date. Metal stamping of the composite surface is prohibited.

5. Reheat treatment of rejected cylinders is not authorized, except that only cylinders made under P/N 6410-001 having 3000 psig service pressure and a nominal volume of 50 cubic inches may be repaired under the following conditions:

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(i) Repairs must be performed by SCI Corporation or a cylinder requalification facility approved by the Associate Administrator for Hazardous Materials Safety (AAHMS).

(ii) Repair must be limited to a maximum of 2 damage sites per cylinder on a one time only basis.

(iii) Each repaired cylinder must be stamped with a small "R" in the neck adjacent to the serial number.

iv) Maximum allowable defect is 1 inch long (no width restriction) by 0.016 inch deep in the sidewall or 0.008 inch deep in the heads. Any cylinder with damage exceeding these limits must be removed from service.

(v) A report identifying the repair facility and a listing of the repaired cylinders by serial numbers must be submitted to the OHMEA at least once every six months from the date of this exemption.

c. OPERATIONAL CONTROLS -

(1) Cylinders manufactured under this exemption are not authorized for use fifteen (15) years after the date of manufacture.

(2) Cylinders may not be used for underwater breathing purposes.

(3) Cylinders used in oxygen service or charged with air enriched with greater than 39 percent by volume oxygen content, must conform with § 173.302(b).

(4) A cylinder that has been subjected to fire may not be returned to service.

(5) Transportation of Division 2.1 (flammable gases) is not authorized aboard cargo vessel or aircraft.

(6) Transportation of oxygen is only authorized when in accordance with § 172.102(c)(2) Special Provision A52 and § 175.85(h) and (i).

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

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 modification or change is made to the package or its contents 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. 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.

e. Each packaging manufactured under the authority of this exemption must be either (1) marked with the name of the manufacturer and location (city and state) of the facility at which it is manufactured or (2) marked with a registration symbol designated for a specific manufacturing facility.

f. 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.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, passenger-carrying aircraft, and cargo-aircraft only (see paragraph 7.c. for restrictions).

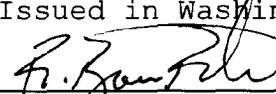
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel and aircraft used to transport packages covered by this exemption. The shipper must furnish a current copy of this exemption to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: 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 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.



for Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

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(DATE)

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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: DBurger/SStaniszewski/sdc