



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

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

SEP 11 2003

DOT-E 10147
(SIXTH REVISION)

EXPIRATION DATE: August 31, 2005

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Structural Composites Industries
Pomona, California
(Former grantee: EFI Corporation)
2. PURPOSE AND LIMITATIONS:
 - a. This exemption authorizes the manufacture, mark, sale and use of non-DOT specification fiber reinforced plastic (FRP) full composite (FC) aluminum cylinders for use in the transportation in commerce of certain Division 2.1 and Division 2.2 materials. 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 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 authorized, excepted as specified herein.
5. BASIS: This exemption is based on the application of Structural Composites Industries dated August 24, 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 39% by volume oxygen)	2.2	UN 1002	N/A
Argon, compressed	2.2	UN 1006	N/A
Carbon dioxide	2.2	UN 1013	N/A
Helium, compressed	2.2	UN 1046	N/A
Hydrogen, compressed	2.1	UN 1049	N/A
Methane, compressed or Natural gas, compressed (with high methane content)	2.1	UN 1971	N/A
Nitrogen, compressed	2.2	UN 1066	N/A
Oxygen, compressed	2.2	UN 1072	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification fiber reinforced plastic (FRP) full composite (FC) aluminum cylinder made in conformance with the following:

(1) EFIC Technical Test Reports on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA) prior to first shipment, and

(2) DOT FRP-2 Standard (178.AA) Revision 2 dated February 15, 1987, except as follows:

§ 178.AA-5 Authorized material.

(a) Aluminum liner must be 6061 alloy and T6 temper.

(b) Filament material must be a two layer system, consisting of inner layers of Kevlar 49 conforming with Aerospace Material Specification (AMS) 3901, and outer layers of commercial Type S or Type E fiberglass. The

kevlar 49 and fiberglass layers must each cover the aluminum cylinder in fulloverwrap patterns. Filaments must be tested in accordance with ASTM D 2343-79 for strand tensile strength. Additionally, Kevlar 49 filaments must be tested in accordance with ASTM D 3317-74 for denier. The minimum strand and denier must be as follows:

(1) Strand strength must be -

400,000 psi for Kevlar 49
400,000 psi for Type S fiberglass
200,000 psi for Type E fiberglass

(2) Kevlar 49 denier must be at least 90 percent of the nominal value specified in AMS 3901. The denier of roving may be certified by the filament manufacturer.

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b. REQUALIFICATION - Each cylinder must be reinspected and hydrostatically retested every three (3) 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 applied on the epoxy coating, near the original test date, in a permanent manner other than stamping. Retest dates may be steel stamped on the outer exposed metallic surface of the cylinder neck as an alternative method. Reheat treatment or repair of rejected cylinders is not authorized.

c. OPERATIONAL CONTROLS - Filling requirements are subject to all terms contained in § 173.302a(a) for DOT 3AL specification cylinders.

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. A cylinder that has been subjected to fire may not be returned to service.
 - h. Cylinders used in oxygen service must conform with § 173.302(b)(1) through (b)(4).
 - i. Cylinders must be shipped in strong outside packagings in accordance with § 173.301(a)(9).
 - j. Transportation of flammable gas is prohibited aboard cargo vessels and passenger carrying aircraft.
 - k. Cylinders manufactured under this exemption are not authorized for use 15 years after the date of manufacture.
 - l. Transportation of oxygen is only authorized by aircraft when in accordance with § 172.102(c)(2) Special Provision A52 and §§ 175.(h) and (i).
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only, and passenger-carrying aircraft (See paragraph 8 of this exemption for restrictions).
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 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

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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: KFW/sln