

February 28, 2006



U.S. Department
of Transportation

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

**Pipeline and
Hazardous Materials
Safety Administration**

DOT-SP 7277
(TWENTIETH REVISION)

EXPIRATION DATE: **January 31, 2010**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Structural Composites Industries
Pomona, California
2. PURPOSE AND LIMITATIONS:
 - a. This special permit authorizes the manufacture, marking, sale and use of a non-DOT specification fiber reinforced plastic (FRP) full wrapped composite (FC) cylinder conforming with DOT FRP-1 Standard, except as specified herein, for the transportation in commerce of certain Division 2.1 and Division 2.2 compressed gases authorized by this special permit. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
 - b. The safety analyses performed in development of this special permit 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 §§ 180.205, 173.302a(a)(1), 173.304a(a)(1), (d) and 175.3 in that non-DOT specification cylinders are not authorized, except as specified herein.

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5. BASIS: This special permit is based on the application of Structural Composites Industries dated June 25, 2001 submitted in accordance with § 107.105 and the public proceeding thereon.
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
Argon, compressed	2.2	UN1006	N/A
Carbon dioxide	2.2	UN1013	N/A
Helium, compressed	2.2	UN1046	N/A
Nitrogen, compressed	2.2	UN1066	N/A
Nitrous oxide	2.2	UN1070	N/A
Oxygen, compressed	2.2	UN1072	N/A
Methane, compressed or Natural gas, compressed (<i>with high methane content</i>)	2.1	UN1971	N/A
Hydrogen, compressed	2.1	UN1049	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification fiber reinforced plastic (FRP) full composite (FC) cylinder made in accordance with SCI's specification SCI Special Report 7338 on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA), and conforming with DOT FRP-1 Standard, Revision 2 dated February 15, 1982 (178.AA), contained in Appendix A of this special permit, except as follows:

§ 178.AA-4 Duties of Inspector.

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(b) (Add) In lieu of testing for filament material properties by the special permit 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 Material.

(a) Aluminum liner must be 6351 or 6061 alloy, T6 temper or 6010 alloy subjected to a solution heat treat and aging appropriate for the alloy as indicated in the application. Aluminum alloy 6351 is not authorized for new construction.

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§ 178.AA-9 Thermal treatment.

(a) The aluminum liner must be solution heat treated and aged as follows after all forming operations and prior to pressurizing or overwrapping.

(1) 6351 and 6061 alloy liners must be solution heat treated and aged to the T6 temper.

(2) 6010 alloy liners must be solution heat treated and aged as appropriate for the alloy indicated in the application.

§ 178.AA-12 Destructive tests.

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

§ 178.AA-18 Design qualification tests.

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

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b. MARKING - Each cylinder must be marked as prescribed in § 178.AA-15 except as follows:

§ 178.AA-15(b) Required markings are as follows:

* * *

Add (6) Rejection elastic expansion (REE) marking in cubic centimeters. The REE for each design type cylinder is obtained as follows:

(i) Perform hydrostatic testing on a lot of cylinders and record elastic expansion (EE) of each cylinder.

(ii) Find the mean value of the EE for all cylinders tested in item 1.

(iii) Mark each cylinder with REE which is equal to 10% above the mean value obtained in item 2. The REE marking must follow the date of test.

(c) thru (d) * * *

c. REQUALIFICATION -

(1) Each cylinder must be reinspected and hydrostatically retested every three years in accordance with §§ 180.205 and 180.209 as prescribed for DOT 3HT cylinders. The hydrostatic test must be conducted in accordance with the procedures specified in § 180.205(g) except that the test pressure must be maintained for a minimum of 60 seconds and as much longer as may be necessary to ensure stable volumetric expansion. The elastic and total volumetric expansions must be determined. Reheat treatment or repair of rejected cylinders is not authorized

(2) 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. Metal stamping of the composite surface is prohibited.

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(3) When a hydrostatic retest is repeated as authorized by § 180.205(g) (5) only two such retests are permitted.

(4) A cylinder not marked with an REE must be condemned if the permanent volumetric expansion exceeds 5 percent of the total volumetric expansion at test pressure.

(5) A cylinder marked with an REE must be condemned if the elastic expansion exceeds the marked rejection elastic expansion.

(6) Each time a cylinder is retested, it must be visually inspected internally and externally in accordance with the terms of CGA Pamphlet C-6.1 and C-6.2. The cylinder must be approved, rejected, or condemned according to the criteria set forth in the applicable CGA pamphlet.

(7) Persons who perform inspection and testing of cylinders subject to this special permit must comply with § 180.205(b) and with all the terms and conditions of this special permit. The marking of the retester's symbol on the cylinders certifies compliance with all of the terms and conditions of this special permit.

d. OPERATIONAL CONTROLS -

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

(2) Cylinders used in oxygen service must conform with § 173.302(b).

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

(4) Transportation of flammable gases is not authorized aboard aircraft or cargo vessel.

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

(6) Cylinder service life may not exceed 15 years from the date of manufacture as marked on the cylinder.

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(7) Filling requirements are subject to all terms contained in § 173.302a for 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 special permit for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this special permit.

b. A person who is not a holder of this special permit, but receives a package covered by this special permit, 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 special permit and the HMR.

c. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

d. A current copy of this special permit must be maintained at each facility where the package is manufactured under this special permit. It must be made available to a DOT representative upon request.

e. Each packaging manufactured under the authority of this special permit 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. Transportation of oxygen by aircraft is only authorized when in accordance with § 172.102(c)(2) Special Provision A52 and § 175.85(h) and (i).

g. When transported by cargo vessel, flammable gases authorized by this special permit must be packed within a closed freight container of steel construction.

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

