



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

March 18, 2025

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 7218
(TWENTY FIRST REVISION)

EXPIRATION DATE: 2028-12-31

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Structural Composites Industries LLC
Pomona, California
2. PURPOSE AND LIMITATIONS:
 - a. This special permit authorizes the manufacture, mark, sale, and use of non-DOT specification cylinders for the transportation in commerce of certain Division 2.2 gases. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein. The most recent revision supersedes all previous revisions.
 - b. The safety analyses performed in development of this special permit only considered the hazards and risks associated with transportation in commerce.
 - c. In accordance with 49 CFR 107.107(a), party status may not be granted to a manufacturing permit. These packagings may be used in accordance with 49 CFR 173.22a.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171- 180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302a(a)(1) and 173.304a(a)(1) in that non-DOT specification cylinders are not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of Structural Composites Industries LLC dated September 6, 2024, and 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 (<i>containing up to 39% by volume oxygen content</i>)	2.2	UN1002	N/A
Bromotrifluoromethane <i>or</i> 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 bromo-trifluoromethane 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 Safety (OHMS), 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 3,000 PSI.

§ 178.AA-4 Duties of Inspector.

(a) * * *

(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 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 or another Para-Aramid poly-paraphenylene terephthalamide (PPTA) fiber in compliance with proposed Society of Automotive Engineers aerospace materials specification Society of Automotive Engineers aerospace material specification SAE 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. The minimum prescribed test pressure is two (2) times the marked service pressure.

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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) through (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) through (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 test pressure is two times the service pressure and 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) Prior to the first shipment of cylinders made with a new Para-Aramid (PPTA) filament material, the design qualification tests required in FRP-1 Standard must be performed and successful test results must be submitted to and be on file with OHMS.
- (2) A cylinder is not authorized 15 years after the date of manufacture.
- (3) Cylinders are authorized only for use as equipment components aboard aircraft or marine craft specially identified to the OHMS.
- (4) Cylinders must be packaged in accordance with § 173.301(a)(9).
- (5) Cylinders subjected to action of fire must be removed from service.
- (6) 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 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. Each packaging manufactured under the authority of this special permit must be marked with a registration symbol designated by the Office of Hazardous Materials Safety for a specific manufacturing facility.
 - e. 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.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo-only aircraft, and passenger-carrying aircraft.
10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel or aircraft used to transport packages covered by this special permit. The shipper must furnish a current copy of this special permit 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 special permit 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 special permit and the Hazardous Materials Regulations, Parts 171-180.
 - o Persons operating under the terms of this special permit 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 special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when the special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) – “The Hazardous Materials Safety and Security Reauthorization Act of 2005” (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term “exemption” to “special permit” and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. **REPORTING REQUIREMENTS:** Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for William Schoonover
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, East Building PHH-13, 1200 New Jersey Avenue, Southeast, Washington, D.C. 20590.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at <https://www.phmsa.dot.gov/approvals-and-permits/hazmat/special-permits-search>. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

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