



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

**January 24, 2022**

1200 New Jersey Avenue, SE  
Washington, DC 20590

DOT-SP 10147  
(THIRTEENTH REVISION)

**EXPIRATION DATE: 2025-12-31**

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Structural Composites Industries  
Pomona, CA
2. PURPOSE AND LIMITATIONS:
  - a. This special permit authorizes the manufacture, marking, 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 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. 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.
  - c. In accordance with 49 CFR 107.107(a) party status may not be granted to a manufacturing permit. These packaging 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 authorized, excepted as specified herein.

5. BASIS: This special permit is based on the application of Structural Composites Industries dated November 19, 2021, 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 <i>or</i> Natural gas, compressed ( <i>with high methane content</i> ) | 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 Safety 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 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 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.
  - 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 special permit 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 § 175.501.
- 9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only, and passenger-carrying aircraft (See paragraph 8.j. and 8.l. of this special permit for restrictions).
  - 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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