



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

March 03, 2022

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 12479
(NINTH REVISION)

EXPIRATION DATE: 2026-02-28

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Luxfer Inc.
Riverside, CA
2. PURPOSE AND LIMITATIONS:
 - a. This special permit authorizes the manufacture, mark, sale and use of non-DOT specification fiberglass hoop wrapped cylinders for the transportation in commerce of the materials authorized by this special permit. The cylinders are authorized for self-contained underwater breathing apparatus (SCUBA) use. 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 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) in that a non-DOT specification cylinder is not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of Luxfer Inc. dated February 15, 2022 and submitted in accordance with § 107.109.

Tracking Number: 2022024528

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
Compressed gas, n.o.s.*	2.2	UN1956	N/A

* Only gases used exclusively for SCUBA service are authorized.

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Prescribed packaging is a non-DOT specification hoop wrapped (HW) fiber reinforced plastic (FRP) cylinder made in accordance with the following:

(1) Luxfer Inc.'s technical data related to their design models S106W and S85W and Luxfer Inc.'s drawings on file with the Office of Hazardous Materials Safety (OHMS).

(2) DOT FRP-2 Standard (§ 178.BB) Revision 1 dated January 4, 1987, except as follows:

§ 178.BB-5 Material.

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

(b) * * *

(c) Resin type must be Shell Epon 826.

* * * * *

§ 178.BB-6 Manufacture.

(a) Liner. Aluminum liner without over-wrap must be designed for a service pressure of at least 67% of the service pressure marked on the completed composite cylinder.

§ 178.BB-7 Wall thickness.

* * * * *

(b) The maximum filament stress at service pressure may not exceed 30 percent of the filament stress at the virgin burst pressure of the lot test cylinder.

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§ 178.BB-10 Pressure relief devices and protection for valves, relief devices, and other connections.

Pressure relief devices and protection for valves and other connections must conform with §§ 173.301(f) and 173.301(h), except that the adequacy of the pressure relief devices for each design may be verified in accordance with § 178.BB-18(g). The pressure relief device must be set at the cylinder test pressure with a tolerance of plus 0% and minus 10%.

§ 178.BB-15 Marking.

(a) * * *

(b) Required markings are as follows:

(1) "DOT-SP 12479" followed by the service pressure in psig.

* * * * *

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 ii. The REE marking must follow the date of test.

Add (7) "AUTHORIZED FOR SCUBA USE"; and "END OF SERVICE LIFE MM YY" where MM YY is the month and year 15 years after the manufacture date.

(c) through (e) * * *

b. REQUALIFICATION:

(1) Each cylinder must be given an annual visual inspection by personnel who are properly trained in accordance with § 172.702. Cylinders that do not pass the annual visual inspection must be rejected and returned to Luxfer Inc. Luxfer Inc. must annually submit a report of all failed cylinders to the OHMSAPD. The report must include the cylinder serial number and date of manufacture. The report must include a description of cuts, abrasions, and other damage detected during visual inspection.

(2) Each cylinder must be reinspected and hydrostatically retested at least every three years in a water jacket suitable for the determination of the expansion of the cylinder. The hydrostatic test must be conducted in accordance with the procedures 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. A cylinder must be condemned if the elastic expansion exceeds the marked rejection elastic expansion.

(3) 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.

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

(5) 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.

(6) 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.

c. OPERATIONAL CONTROLS:

- (1) Cylinders are authorized for underwater use only.
- (2) Annual production is limited to three thousand (3000) of each of the two authorized cylinder designs, S106W and S85W. Complete identification and serial number of these cylinders must be submitted to the OHMSAPD.
- (3) Cylinders charged with oxygen must be transported in accordance with §§ 173.302a(b)(5)(1) through (b)(5)(4).
- (4) Filling requirements are subject to all terms contained in § 173.302a for 3AL Specification cylinders.
- (5) Cylinders must be packaged in accordance with § 173.301(a)(9).
- (6) A cylinder that has been subjected to fire may not be returned to service.
- (7) A cylinder is not authorized for use 15 years after the date of manufacture. After 15 years of service, the cylinder must be rendered incapable of holding pressure.
- (8) Luxfer Inc. must carry out an in-service test and evaluation plan as follows:
 - (i) Luxfer Inc. must sample cylinders from those manufactured during the first two years of production. Sampling and testing must be as summarized in the table below. Cylinders must be given a requalification in accordance with paragraph 7.b.(2) thru (6) of this special permit. Each cylinder must then be given a hydrostatic burst test in accordance with the requirements of DOT FRP-2 § 178.BB-12(b).

FROM PRODUCTION YEAR	SAMPLE GROUP NUMBER	YEARS IN SERVICE	TEST YEAR	MINIMUM SAMPLE SIZE PER DESIGN
1	1	6	6	15
2	2	6	7	15
1	3	9	9	15
2	4	9	10	15
1	5	12	12	15
2	6	12	13	15

(ii) Luxfer Inc. must submit a report of the inspection and test results from sample group number one to OHMSAPD upon completion. Reports of subsequent sample group testing must be submitted every three years. Each report must include the cylinder serial number and date of manufacture. The report must include a description of cuts, abrasions, and other damage detected during visual examination. The report must include notation of total and elastic expansion measured during the hydrostatic test. The report must include the failure mode, and burst pressure of the cylinder.

8. SPECIAL PROVISIONS:

- a. Transportation of oxygen is only authorized when in accordance with § 175.501.
- b. 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.
- c. 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 modification or change is made to the package and it is offered for transportation in conformance with this special permit and the HMR.
- d. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.
- 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 by the Office of Hazardous Materials Safety for a specific manufacturing facility.
- f. 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.
- g. 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.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, passenger carrying vessel, cargo aircraft only, and passenger-carrying aircraft (see paragraph 8.a. for restrictions).

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each passenger vessel, cargo vessel and 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 this 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.:

A handwritten signature in blue ink, appearing to read "W. Schoonover", is written over a faint, illegible stamp.

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.

PO: Andrew Eckenrode