

November 18, 2020



U.S. Department
of Transportation

East Building, PHH-30
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

**Pipeline and Hazardous
Materials Safety Administration**

DOT-SP 14509
(NINTH REVISION)

EXPIRATION DATE: 2024-02-29

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Pacific Consolidated Industries LLC
Riverside, CA
2. PURPOSE AND LIMITATIONS:
 - a. This special permit authorizes the manufacture, mark, sale, and use of non-DOT specification fully wrapped carbon-fiber reinforced brass or copper lined cylinders for the transportation in commerce of the materials authorized by this special permit. 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.

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4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302(a) and 173.304(a) in that non-DOT specification cylinders are not authorized, except as prescribed herein; and § 173.302(f) (3) through (5) and § 175.501(e) (3) when transported aboard military aircraft only.
5. BASIS: This special permit is based on the application of Pacific Consolidated Industries LLC dated June 16, 2020, 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
Nitrogen, compressed	2.2	UN1006	N/A
Oxygen, compressed	2.2	UN1072	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Prescribed packaging is a fully wrapped carbon-fiber reinforced brass or copper lined cylinder manufactured in conformance with the Basic Requirements for Fully Wrapped Carbon-Fiber Reinforced Aluminum Lined Cylinders (DOT-CFFC Fifth Revision, dated March 2007), drawings and specification submitted by Pacific Consolidated Industries LLC on file with the Office of Hazardous Materials Safety Approvals and Permits Division (OHMSAPD) and the following exception:

CFFC-1 *Scope*: Throughout the document replace all references to aluminum alloy liner to a brass or a copper liner.

CFFC-2 *Type, Size, and Service Pressure*: The maximum volume must not exceed 3.1 cubic feet with a diameter less than or equal to 20 inches. The marked service pressure must not exceed 3,000 psig at a reference temperature of 21.1 °C (70 °F).

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Galvanic corrosion will be prevented by coating the liner with a thin layer of epoxy prior to wrapping with carbon fiber.

CFFC-6 Authorized Material and Identification of Liner Materials:

(a) - The liner must be a seamless cylinder made of SAE CA 260 brass or 11000 copper plate.

(i) * * * *

(ii) The material compositions of the brass and copper must be within the limits prescribed herein:

If brass is used, the material composition must be within the limits prescribed herein:

<u>Element</u>	<u>Min %</u>	<u>Max %</u>
Copper	68	72
Zinc	28	32
Other	-	0.5

If copper is used, the material composition must be within the limits prescribed herein:

<u>Element</u>	<u>Min %</u>	<u>Max %</u>
Copper	99.8	-
Oxygen	-	0.05
Other		0.2

(iii) * * * *

(iv) * * * *

(v) Stress relieving may be applied to achieve desired yield strength and elongation

(vi) The limits for the mechanical properties of the brass or copper liner shall be as follows:

Yield strength	38,000 - 50,000 psi
Tensile strength	40,000 - 70,000 psi
Elongation (2" gauge)	25% min

(b) *Filament materials*

(i) Carbon fiber

Tensile strength 710,000 psi minimum
Tensile modulus 32,000,000 - 36,000,000 psi

(ii) Glass fiber: Only type E or type S glass fibers are authorized.

b. Requalification: Each cylinder must be requalified once every 5 years as described in this special permit. The facility that performs requalification of these composite cylinders must be a RIN holder for requalification of this type of composite cylinder as described in § 180.205(b) and have a valid special permit for requalification of DOT-CFFC cylinders by using the Modal Acoustic Emission (MAE) method.

(1) Requalification Procedure: The requalification procedure must be in accordance with the Modal acoustic emission (MAE) examination Specification for Requalification of Composite Overwrapped Pressure Vessels (Cylinders and tubes) posted on PHMSA website, <https://www.phmsa.dot.gov/technical-resources/hazmat-technical-resources/technical-reports> and the additional procedure provided by the MAE special permit holder on file with the OHMSAPD.

(2) Marking: Retest markings must be permanently applied on a label securely affixed to the COPV and over coated with epoxy, near the original test date. The retest markings must include the retest date, requalifier RIN, and "MAE" as the requalification test procedure. The marking of the RIN number on the COPV certifies compliance with all terms and conditions of the MAE Requalification special permit.

c. OPERATIONAL CONTROLS:

(1) Cylinders manufactured under this special permit are not authorized for use fifteen (15) years after the date of manufacture except those cylinders that are qualified for the additional service life extension as described in paragraph 8.a. of this special permit.

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

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

(4) Transportation of the cylinder, oxygen service, by aircraft is only authorized when in accordance with § 175.501.

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

(6) For Military Aircraft Only, the outer packaging requirements of § 173.302(f)(3) through (5) and § 175.501(e)(3) are waived. The cylinder transported in this manner must be overpacked in the Mobile Oxygen Storage Tank (MOST) cases described in the application for modification of this special permit.

8. SPECIAL PROVISIONS:

a. Service Life Extension Program: Cylinders manufactured under this special permit may be authorized for an additional maximum service life of 15 years from the date of manufacture in accordance with the PCI service life extension program "REVALIDATION PLAN, 310101, Rev B", dated June 22, 2020 on file with the OHMSAPD that includes the following requirements:

(1) The service life extension program must be implemented for the cylinders (DOT-CFFC with brass liner) manufactured under this special permit. The cylinders intended for additional service life beyond the initial 15 years to determine the additional years of service life. The maximum service life of each cylinder under this special permit is 30 years from the date of manufacture

(2) Under the service life extension program, the grantee must randomly recall a minimum of 5 cylinders which have been in service for 18, 21, 24, and 27 years.

(3) All randomly selected cylinders from the field must be tested in accordance with Sections 8.5.4, 8.5.5, 8.5.7 and 8.5.8 of ISO 11119-2:2012. Acceptance criteria must be as defined in ISO 11119-2; and

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(4) The complete MAE test report, including the original test data, must be submitted to the OHMSAPD for assessment within 30 days of completion of the test. Failure to meet the acceptance criteria specified in this special permit may result in the design being restricted to a maximum life of 15 years.

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 Office of Hazardous Materials Safety Approvals and Permits Division for a specific manufacturing facility.

f. A current copy of this special permit must be maintained at each facility where the packaging 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, cargo aircraft, and passenger-carrying aircraft (see paragraph 7.c.(4) for restrictions).

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10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each motor vehicle, cargo vessel, and aircraft used to transport packages covered by this special permit. The shipper must furnish a 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, 49 CFR 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

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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-30, 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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