



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

April 11, 2023

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 21178
(FIRST REVISION)

EXPIRATION DATE: 2027-03-31

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Meggitt Safety Systems, Inc.
Simi Valley, CA
2. PURPOSE AND LIMITATION:
 - a. This special permit authorizes the manufacture, mark, sale and use of non-DOT specification welded stainless steel cylinders, conforming to all regulations applicable to a DOT specification 3HT cylinder, except as specified herein, 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 use as a component of another 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 in that a non-DOT specification packaging is not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of Meggitt Safety Systems, Inc., dated March 31, 2023, submitted in accordance with § 107.109.

Tracking Number: 2023044054

6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Oxygen, compressed	2.2	UN1072	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Prescribed packaging is a non-DOT specification girth welded stainless steel cylinder, Meggitt part number: 41004692-1, made in accordance with Meggitt drawings 41004692 and 53040728, and information as to material selection and performance described within the application on file with the Office of Hazardous Materials Safety (OHMS). The cylinders must be in conformance with DOT-3HT Specification (§ 178.35 and 178.44), except as follows:

§ 178.44(a) Type, size, and service pressure.

The cylinder has a girth welded end fitting, water capacity not over 4.5 cubic inches, and a maximum service pressure of 2500 psig.

§ 178.44(b) Authorized steel.

ARMCO Nitronic 40 (21-6-9) austenitic stainless steel with the following composition:

Chemical Analysis	
	Percent
Carbon	0.040 MAX
Manganese	8.00/10.00
Phosphorous	0.060 MAX
Sulfur	0.030 MAX
Silicon	1.00 MAX
Chromium	19.00/21.5
Nickel	5.50/7.50
Nitrogen	0.15/0.40

§ 178.44(c) Identification of material. * * *

§ 178.44(d) Manufacture.

Each cylinder must be subjected to a process treatment after welding and before stress relieving by hydrostatically pressurizing to at least 100 percent, but not more than 110 percent of the test pressure for 3 minutes. The process treatment must be witnessed by the Independent Inspector. Total permanent expansion need not be recorded.

§ 178.44(e) Welding or brazing.

Cylinder end must be autogenously welded to the cylinder per AWS D17.1 (GTAW), Class A. All welds must be radiographically inspected per ASTM E1742/E1742M, Level 2-2T. Acceptance criteria per AWS D17.1, Class A.

§ 178.44(f) Wall thickness.

(1) Minimum wall thickness must be 0.053 inches. The minimum wall thickness must be such that the wall stress at the minimum specified test pressure does not exceed 75 percent of the minimum tensile strength of the stainless steel as shown on material purchase certificates and may not be over 105,000 psi.

(2) * * *

§ 178.44(g) Heat treatment.

All cylinders must be stress relieved at $900^{\circ}\text{F} \pm 25^{\circ}\text{F}$ for 1 hour. This will be done after process treatment and before hydrostatic testing.

§ 178.44(i) Pressure testing.

- (1) The test must be by the proof pressure method as prescribed in CGA C-1.
- (2) Each cylinder must be tested to 4,760 psi, minimum.

§ 178.44(j) Cycling tests.

- (1) * * *
- (2) Cycle testing on each lot is not required, if three cylinders have been cycle tested for 10,000 pressurizations during initial design qualification.
- (3) * * *
- (4) * * *

§ 178.44(k) Burst tests. * * *

§ 178.44(l) Flattening test.

Flattening test on each lot is not required, if three cylinders have been tested during initial design qualification.

§ 178.44(m) Physical tests.

In lieu of performing physical tests on each lot, the material certifications that are provided with each heat lot will be used to validate the guaranteed yield strength, tensile strength, and elongation.

§ 178.44(n) Magnetic particle inspection.

In place of magnetic particle inspection, each cylinder will be inspected using apparatus and procedures for liquid penetrant examination in accordance with ASTM E1417/E1417M, Type 1, Method A, sensitivity level 3, developer form D and interpret per MIL-STD-1907, Table III, Grade A.

§ 178.44(o) Leakage test. Not applicable

§ 178.44(p) Acceptable results of tests.

- (1) * * *
- (2) Physical tests: Not required on lot basis.
- (3) Burst pressure must be at least 3 times the service pressure. Failure should initiate in the cylinder sidewall and the cylinder should remain in one piece. Actual burst pressure must be recorded.
- (4) Design qualified by pressure cycling 3 cylinders from approximate 0 psig to service pressure for at least 10,000 cycles without evidence of distortion or failure. Post cycle burst tests should not result in a burst pressure less than that required for the virgin cylinders.

§ 178.44(q) Rejected cylinders.

Repair of welded seams by welding prior to process treatment is authorized; subsequent thereto every cylinder that has been re-welded, must be heat treated and pass all prescribed tests.

§ 178.44(r) Marking.

- (1) a. Instead of DOT-3HT, cylinders will be marked with “DOT-SP 21178” followed by the service pressure.

b. Marking must be durable and waterproof. A low stress type method such as electro-chemical etching, vibro-pen, or laser marking, which does not decrease the integrity of the pressure vessel shall be used.
- (2) Rejection elastic expansion (REE) stamping is not required, as these cylinders do not get re-filled.
- (3) Name plates - not required. However, the cylinders must have a label with the following statement: “Federal law forbids transportation if refilled-penalty up to \$500,000 fine and 5 years imprisonment (49 U.S.C. 5124).”

§ 178.44(s) Inspector’s report.

The inspectors report will be appropriately modified to reflect identification and compliance with the special permit.

b. TESTING: Cylinders are only filled once. Cylinders are not reinspected, nor are they periodically hydrostatically tested.

c. OPERATIONAL CONTROLS:

- (1) Safety devices: The cylinders must be equipped with frangible disc type safety relief device that has a burst pressure at room temperature of between 3,500 – 4,200 psi. The frangible disk rated bursting pressure must not exceed 90% of minimum required test pressure.
- (2) The cylinders are authorized for use as components of military weapons systems only.
- (3) The cylinders must be shipped in in the following packaging combination.
- (4) Cylinders must first be sealed in ESD inner bags, and then placed inside DOT 31FP rated outer boxes.
- (5) The cylinders are not authorized for use 15.5 years after the date of manufacture.

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 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.
- 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. Transportation of Oxygen by air must be in accordance with §§ 173.302(f) or 173.304(f) except that the specification packaging requirement of paragraph (f)(1) is waived.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo aircraft only, and passenger-carrying aircraft. A current copy of the special permit will be packaged and carried with each shipment.
10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each 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 light blue circular 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: Casey Chambers