September 02, 2022

U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

DOT-SP 9221
(FIFTEENTH REVISION)

EXPIRATION DATE: 2026-07-31

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Applied Pressure Vessels, Inc
Santa Clarita, CA

2. PURPOSE AND LIMITATIONS:

a. This special permit authorizes the manufacture, mark, sale, and use of non-DOT specification stainless steel cylinders, which are part of a military weapons system, used for the transportation in commerce of nitrogen, argon, or helium. 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 § 173.302(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 Applied Pressure Vessels, Inc dated August 3, 2022, submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous Material Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi-fication Number**	**Packing Group**
Argon, compressed	2.2	UN1006	N/A
Helium, compressed	2.2	UN1046	N/A
Nitrogen, compressed	2.2	UN1066	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Prescribed packaging is a non-DOT specification girth welded stainless steel cylinder having 75 cubic inches maximum water capacity and 5,370 psig maximum service pressure. It is manufactured in compliance with Applied Pressure Vessels drawing 270-14 Revision L on file with the Office of Hazardous Materials Safety (OHMS) and DOT Specification 3HT (§ 178.35 and § 178.44), except as follows:

§ 178.35(e) *Safety devices*. Applies except a statement verifying the adequacy of the pressure relief devices for each cylinder design must be submitted to the OHMS prior to initial shipment.

§ 178.44(a) *Type, size and service pressure*. Girth welded stainless steel type cylinder with one end fitting welded in accordance with Applied Pressure Vessels drawing 270-14 Revision L, with a water capacity not to exceed 75 cubic inches water volume and a maximum service pressure of 5,370 psig.

§ 178.44(b) *Authorized steel*.

(1) Corrosion resistant steel per AMS 5595 and AMS 5656 (21-6-9) or Nitronic 40 stainless steel with the following analysis is authorized for the cylinder body with proper welding procedure.

CHEMICAL ANALYSIS	PERCENT
Carbon	0.040 max.
Manganese	8.00/10.00

CHEMICAL ANALYSIS	PERCENT
Phosphorous	0.060 max.
Sulfur	0.030 max
Silicon	1.00 max.
Chromium	19.00/21.50
Nickel	5.50/7.50
Nitrogen	0.15/0.40

(2) Nitronic 50 or 22-13-5 material in compliance with ASTM A 479 is authorized for the welded fitting.

§ 178.44(d) *Manufacture*. Each cylinder shall 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 and maintained at this pressure for 3 minutes. The process treatment must be witnessed by an independent inspector. Total and permanent expansion need not be recorded.

§ 178.44(e) *Welding or Brazing*.

(1) Welding, as prescribed in § 178.44(a) of this special permit, is authorized.

(2) All pressure welds must be 100 percent radiographed and penetrant inspected per §178.44(n) of this special permit after hydrostatic test.

§ 178.44(f) *Wall thickness*.

(1) Minimum wall thickness for any cylinder must be 0.050 inch. The minimum wall thickness must be such that the wall stress at the minimum specified test pressure shall not exceed 75 percent of the minimum tensile strength of the stainless steel and such stress shall not be over 112,000 psi.

(2) and (3) * * *

§ 178.44(g) *Heat treatment*. The half cylinders may be stress relieved or annealed for forming. Welded cylinders must be stress relieved at a temperature of 900 °F ± 25 °F for one hour. Stress relieving to be done after process treatment and before hydrostatic test.

§ 178.44(j) *Cycling tests*.

(1) * * *

(2) Cycling test of each lot is not required. Instead, each design must be qualified per §178.44(p) of this special permit.

§ 178.44(m) *Physical tests*. Not required.

§ 178.44(n) *Magnetic particle inspection*. Not required. Instead, each cylinder must be inspected using apparatus and procedures for liquid penetrant examination in accordance with ASTM E-165-65. Inspection shall be performed externally on the finished cylinder after hydrostatic test. Evidence of discontinuities, which in the opinion of the independent inspector may significantly weaken or decrease the durability of the cylinder, shall be cause for rejection.

§ 178.44(p) *Acceptable results of tests.*

(1) Flattening required without cracking to six times the wall thickness of the cylinder.

(2) Physical tests: Not required.

(3) Burst pressure shall be at least 4/3 times the test pressure. Failure must initiate in the sidewall of the cylinder in a longitudinal direction. Actual burst pressure must be recorded.

(4) Cycling: Each design must be qualified by cycle testing 3 prototype cylinders from zero to marked service pressure for 50,000 cycles minimum without distortion or failure. All cycled cylinders must be destroyed.

§ 178.44(q) *Rejected cylinders*. Repair of welded seams by welding prior to process treatment authorized; subsequent thereto, cylinders must be heat-treated and pass all prescribed tests.

§ 178.44(r) *Marking*.

(1) Applies except instead of DOT-3HT, cylinders must be marked "DOT-SP 9221" followed by the service pressure in accordance with § 178.35(f).

(2) Stamping of elastic expansion is not required.

(3) * * *

§ 178.44(s) *Inspectors report.* The inspector's report under the provisions of § 178.35 must be appropriately modified to reflect compliance with this special permit.

b. TESTING: Each cylinder must be reinspected and hydrostatically retested every 3 years in accordance with § 180.205 as prescribed for DOT-3HT cylinders except that the rejection elastic expansion does not apply.

c. OPERATIONAL CONTROLS:

(1) A cylinder manufactured under the special permit is not authorized 30 years after the date of manufacture.

(2) Cylinders are limited to use in military weapons systems. With the exception of the maximum service life, cylinders must conform to the requirements prescribed in § 173.302a(a)(2). A copy of the inspector's report on the first lot of cylinders produced must be submitted to the OHMS prior to initial shipment.

8. SPECIAL PROVISIONS:

a. Prior to first shipment using the design with a service pressure of 5,370 psig under the terms of this special permit, the cyclic qualification tests must be satisfactorily completed without distortion or failure. Three prototype cylinders must be pressurized from zero to 5,370 psig for a minimum of 50,000 cycles. The test results must be submitted to the OHMS and be acknowledged in writing prior to cylinders being used in transportation.

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 marked with a registration symbol designated by the OHMS 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. Cylinders must be shipped in strong outside packagings in conformance with § 173.301(a)(9).

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, and cargo-only aircraft.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each aircraft, vessel, or motor vehicle used to transport packages covered by this special permit. The shipper shall 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:

- All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, Parts 171-180.
- 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.
- 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.

PO: RS/NICKS