October 30, 2019

U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety Administration**

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

DOT-SP 20900

EXPIRATION DATE:2021-09-30

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Ametek Ameron, LLC
DBA Mass Systems
Baldwin Park, CA

2. PURPOSE AND LIMITATIONS:

a. This special permit authorizes the manufacture, mark, sale and use of non-DOT specification 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 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 173.302(a) in that non-DOT specification cylinders are not authorized and

§ 173.56(b) in that a cylinder with an approved pyrotechnic cutter installed must be examined, classified and approved, except as specified herein.

5. BASIS: This special permit is based on the application of Ametek Ameron, LLC DBA MASS Systems dated June 11, 2019, and additional information dated October 4, 2019 submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous Material Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi-fication Number**	**Packing Group**
Compressed gas, n.o.s *(Nitrogen containing 5% Helium)*	**2.2**	**UN1956**	**N/A**

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Prescribed packaging is a non-DOT specification cylinder conforming to Ametek Ameron, LLC DBA Mass Systems Drawing M53040079-1 Rev. D, and the information as to material selection and performance described in the application on file with the Office of Hazardous Materials Safety Permits and Approvals (OHMSPA). The cylinders must be in conformance with the DOT-3HT Specification (§§ 178.35 and 178.44), except as follows:

§ 178.35(e) *Safety devices*

A frangible disc type safety relief device for each cylinder is required. The maximum rupture pressure of the safety device must not be more than 90 percent of the cylinder rated test pressure specified in § 178.44(i) of this special permit.

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

The cylinder consists of a titanium alloy (6Al-4V) body with welded hemispherical heads (6AL-4V) and threaded openings in accordance with the drawing referenced above. The water capacity must be not over 35 cubic

inches nominal and service pressure not to exceed 3,200 pounds per square inch gauge at 70 °F.

§ 178.44(b) *Authorized Material*.

Vessel Body and Boss End Caps: Bar stock titanium alloy type 6AL-4V conforming to Aerospace Material Specification SAE AMS 4928. The alloy chemistry and mechanical properties must be as follows:

ELEMENT	PERCENT BY WEIGHT
Aluminum	5.5 - 6.5
Vanadium	3.5 - 4.5
Iron	0.30 max
Carbon	0.08 max
Nitrogen	0.05 max
Oxygen	0.20 max
Yttrium	0.015 max
Other elements	0.40 max
Titanium	Balance

MECHANICAL PROPERTIES:

Tensile Strength:	115,000 psi minimum
Yield strength:	95,000 psi minimum
Elongation:	10% minimum

§ 178.44(c) * * *

§ 178.44(d) *Manufacture*

The cylindrical shell is manufactured by gun drilling and machining titanium alloy (6AL-4V) bar stock. The end caps are machined from titanium alloy (6AL-4V) bar stock and are then welded to the cylindrical shell to form a complete cylinder.

§ 178.44(e) *Welding or brazing*

The welding procedure must be the same as that used in preparing the design qualification cylinders. The welding process and any modification thereto must be documented and made available to the DOT authorized Inspector, upon request. All pressure weld seams must be examined by 100 percent radiography.

§ 178.44(f) *Wall thickness*

(1) Applies, except minimum wall thickness of any cylinder must not be less than 0.088 inch instead of 0.050 inch.

(2) thru (3) * * *

§ 178.44(g) *Heat treatment*

The complete cylinder(s) must be uniformly and properly stress relieved prior to the hydrostatic pressure test. The stress relief consists of heat treating cylinders between 900 to 950 °F, for a period of 30 minutes in an inert gas or vacuum atmosphere and argon fan cooled to below 200 °F. Heat treatment for the purposes of modifying mechanical properties or performance of completed cylinders is not authorized.

§ 178.44(h) * * *

§ 178.44(i) *Hydrostatic test*

(1) and (3) * * *

(4) Each cylinder must be hydrostatically tested to a pressure of 7,000 pounds per square inch gage.

§ 178.44(j) & (k) * * *

§ 178.44(l) *Flattening test*

Flattening test not required.

§ 178.44(m) * * *

§ 178.44(n) *Magnetic particle inspection.*

Not required. Instead, after hydrostatic test, each finished cylinder must be externally inspected using apparatus and procedures for liquid penetrant examination in accordance with ASTM E-165-65. Evidence of discontinuities, which in the opinion of the independent inspector may appreciably weaken or decrease the durability of the cylinder, shall be cause for rejection.

§ 178.44(o) *Leakage test*

Not applicable.

§ 178.44(p) *Acceptable results of tests*

(1) Not required.

(2) Physical tests.

(i) Elongation at least 10% minimum for a gauge length not less than 2 inches. Reduction in area must be recorded.

(ii) Ultimate tensile strength is 115,000 psi minimum; yield strength is 95,000 psi minimum.

(3) Burst pressure: Minimum burst pressure must be 3.5 times the service pressure.

(4) Cycling tests: Each new design must be qualified by cyclic pressure tests prescribed in § 178.44(j) of this special permit. The cylinders must withstand at least 50,000 cycles at service pressure without showing any evidence of distortion or failure. One cylinder from each lot must be tested to 20,000 cycles (at service pressure) without distortion or failure.

§ 178.44(q) *Rejected cylinders*

The cylinders in a lot must be rejected if the lot qualification test cylinder fails any required test or inspection. A rejected lot may be used only if the cause of the failure is known and proper corrective action, which may include weld repair, is acceptable to the DOT authorized inspector. The lot must pass all prescribed tests.

§ 178.44(r) *Marking*

(1) Applies, except that:

(i) Instead of DOT-3HT, each cylinder must be marked "DOT-SP 20900" followed by the service pressure.

(ii) Marking by low stress type method such as electro-chemical etching, vibro-pen or laser marking, which does not decrease the integrity of the cylinder, is authorized.

(2) Rejection elastic expansion (REE) stamping is not required.

(3) Name plates not required.

§ 178.44(s) *Inspector's report*

Inspector's report shall be appropriately modified to reflect identification and conformance with this special permit. A copy of the inspector's report for the first lot of cylinders produced shall be submitted to the Office of Hazardous Materials Special Permits and Approvals prior to initial shipment.

b. REQUALIFICATION: Each cylinder must be inspected and hydrostatically retested every 5 years in accordance with § 180.205 as prescribed for DOT-3HT cylinders except that elastic expansion measurement is not required.

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 packaging covered by this special permit, may reoffer it for transportation provided no modification or change is made to the packaging 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 Special Permits and Approvals for a specific manufacturing facility.

e. 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.

f. Cylinders are limited to the use in the Emergency Power Actuator System (EPAS) for commercial Boeing 777 aircraft as described in the AMETEK Ameron, LLC DBA MASS Systems' application.

g. Cylinders must be shipped in strong outside packaging in conformance with § 173.301(a)(9).

h. A cylinder is not authorized 24 years after the date of manufacture.

i. The cylinders are acceptable for shipment with an approved pyrotechnic cutter installed in the outlet fitting for actuation.

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

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel, aircraft or motor vehicle 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:

- All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR 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 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.:

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 http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: RS/TG