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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 10914
(ELEVENTH REVISION)

EXPIRATION DATE: February 28, 2018

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Honeywell International, Inc.
Morristown, NJ
2. PURPOSE AND LIMITATIONS:
 - a. This special permit authorizes the manufacture, marking, sale and use of a non-DOT specification cylinder conforming with all regulations applicable to a DOT Specification 3HT cylinder for the transportation in commerce of the material 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.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.302a (a) in that non-DOT specification cylinders are not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of Honeywell International, Inc. dated December 19, 2013, submitted in accordance with § 107.109.

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6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Helium, compressed	2.2	UN1046	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a spherical non-DOT specification welded pressure vessel, made of a titanium alloy. The vessel has a water capacity of 1385 cubic inches, nominal and a 10,000 psig maximum service pressure. The pressure vessel must conform with Garrett Fluid Systems Division (GFSD) Drawing 3253238, and technical specifications and calculations on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA). In addition, the pressure vessel must conform with DOT Specification 3HT cylinders (§§ 178.35 and 178.44) except as follows:

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

Welded spherical pressure vessel as shown in GFSD Drawing 3253238 having a nominal water capacity of 1385 cubic inches with a service pressure of 10,000 psig maximum.

§ 178.44(b) *Authorized material.*

Titanium alloy TI-6AL-4V conforming with AMS 4967.

§ 178.44(d) *Manufacture.*

By best appliances and methods; dirt and scale to be removed as necessary to afford proper inspection. Two machined half shells must be welded in accordance with AMS 2680 with one girth weld.

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§ 178.44(e) *Welding or Brazing.*

Welding as prescribed in § 178.44(d) of this special permit is authorized. All welds must be 100 percent radiographed and penetrant inspected after hydrostatic test.

§ 178.44(f) *Wall thickness.*

(1) Minimum wall thickness must be such that the wall stress at minimum specified test pressure shall not exceed 75 percent of the minimum tensile strength of the material as determined from the physical tests prescribed in § 178.44(m), and shall not be over 155,000 psi.

(2) Calculations must be made by the formula:

$$S = PD/4t$$

where:

S = Wall stress in pounds per square inch gauge;
P = Minimum test pressure in pounds per square inch gauge;
D = Inside diameter in inches; and
t = minimum wall thickness in inches.

§ 178.44(g) *Heat treatment.*

Each pressure vessel must be heat treated per MIL-H-81200 and GFSD Drawing PL3253238 to obtain the mechanical properties specified in § 178.44(p) of this special permit.

§ 178.44(i) *Hydrostatic test.*

Applies except that test pressure is 17,250 psig, minimum.

§ 178.44(j) *Cycling tests.*

The cyclic pressurization test must be performed on at least three prototype pressure vessels.

(1) * * *

(2) Cyclic testing on a lot basis is not required.

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(3) In this special permit, a "lot" is defined as a group of pressure vessels successively produced having the same:

- (a) size and configuration;
- (b) specified material of construction;
- (c) process of manufacture and heat treatment;
- (d) equipment of manufacture and heat treatment;
and
- (e) condition of time temperature and atmosphere during heat treatment.

In no case may the lot size exceed 200 pressure vessels but any pressure vessel processed for use in the required destructive testing need not be counted as being one of the 200 cylinders.

(4) * * *

§ 178.44(l) *Flattening test.*

Not required

§ 178.44(m) *Physical tests.*

* * *

(1) Required on 2 specimens cut from one pressure vessel out of each lot or from a ring of the same thickness as the spherical pressure vessel subjected to the same heat treatment as the finished pressure vessel.

* * *

§ 178.44(n) *Magnetic particle inspection.*

Magnetic particle inspection is not required. Instead, each pressure vessel must be inspected using apparatus and procedures for liquid penetrant examination in accordance with MIL-STD-6866 with acceptance criteria in accordance with MIL-STD-1907. Inspection shall be performed externally on the finished pressure vessel after hydrostatic test. Evidence of discontinuities, which in the opinion of the qualified inspector may appreciably weaken or decrease the durability of the pressure vessel, shall be cause of rejection.

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

- (1) Not applicable
- (2) Physical tests: The following minimum mechanical properties must be met:
 - (i) Ultimate tensile strength = 155,000 psi;
 - (ii) Yield strength = 145,000 psi;
 - (iii) Elongation = 10% minimum;
 - (iv) Reduction in area = 20% minimum
- (3) Minimum burst pressure = 22,450 psig.
- (4) Cycling: Test pressure vessels must withstand at least 5,000 pressurizations without evidence of distortion or failure.

§ 178.44(q) *Rejected pressure vessels.*

- (1) Reheat treatment is authorized; subsequent thereto, acceptable pressure vessels must pass all prescribed tests.
- (2) Repair of welds is authorized after which reheat treatment is required and; subsequent thereto, acceptable pressure vessels must pass all prescribed tests.

§ 178.44(r) *Marking.*

- (1) Applies, except that:
 - (i) Instead of DOT-3HT, pressure vessels must be marked "DOT-SP 10914" followed by the service pressure and in accordance with § 178.35 (f).
 - (ii) Marking by low stress type method such as electrochemical etching, vibro-pen or laser marking, which does not decrease the integrity of the pressure vessel, is authorized.
- (2) Stamping of elastic expansion is not required.
- (3) Name plates are not required.

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§ 178.44(s) *Inspector's Report.*

The inspector's reports must be appropriately modified to reflect compliance with this special permit.

b. TESTING - Each pressure vessel may not be filled and shipped unless it has been reinspected and hydrostatically retested every 3 years in accordance with § 180.209(a) as prescribed for DOT-3HT cylinders, except that the rejection elastic expansion criteria does not apply.

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 modification or change is 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 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 package is manufactured under this special permit. It must be made available to a DOT representative upon request.

f. Pressure vessels are subject to the use restrictions prescribed in § 173.302a(a)(2), except that they may also be used in military weapons or defense initiatives systems. A copy of the inspector's report on the first lot in § 178.44(s) must be submitted to the OHMSPA prior to initial shipment.

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- g. Pressure vessels must be shipped in strong outside packagings in conformance with § 173.301(a)(9).
- h. The use of pressure vessels is not authorized 10 years after the date of manufacture or after 10 refills, whichever comes first.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel and cargo aircraft only.
10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each 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, 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 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

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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 Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

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: SGrey