DOT-SP 21282

EXPIRATION DATE: 2022-05-31

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: The Boeing Company
   Chicago, IL

2. PURPOSE AND LIMITATIONS:
   a. This emergency special permit authorizes the transportation in commerce of compressed Oxygen, Division 2.2 gas in non-DOT specification cylinders conforming to all regulations applicable to DOT spec 4DS except as specified herein. 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. No party status will be granted to this special permit.


4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.302 in that the cylinder is not an authorized packaging; .

5. BASIS: This emergency special permit is based on the application of The Boeing Company dated August 20, 2021, submitted in accordance with § 107.117 and the determination it is necessary to prevent economic loss.
6. HAZARDOUS MATERIALS (49 CFR 172.101):

<table>
<thead>
<tr>
<th>Hazardous Material Description</th>
<th>Hazard Class/Division</th>
<th>Identification Number</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen, compressed</td>
<td>2.2</td>
<td>UN1072</td>
<td>N/A</td>
</tr>
</tbody>
</table>

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Prescribed packaging is a non-DOT specification circumferentially welded stainless-steel cylinder, complying with design, material selection, and performance described in the application on file with the Office of Hazardous Materials Special Permits and Approvals. The cylinders must be in conformance with DOT-4DS Specification (§§ 178.35 and 178.47), except as follows:

§ 178.35(b) Inspections and analysis.

(2) Inspections and verifications are performed by a competent inspector of the manufacturer in accordance with the sampling and lot size requirements per ANSI/ASQ Z1.4 & MIL-DTL-5586.

§ 178.47(a) Type, size, and service pressure.
The cylinder is a circumferentially welded stainless-steel cylinder with nominal diameter of 5.75-inch, water capacity not over 280 cubic inches, and a maximum service pressure of 450 psig.

§ 178.44(b) Authorized steel.
Stainless steel 304L CRES (0.03% C Max) per ASTM A240 (or AMS 5511, or AISI-304L) is authorized with proper welding procedure.

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

§ 178.47(d) Manufacture.
Cylinders must be manufactured using equipment and processes adequate to ensure that each cylinder produced is free from any defect that is likely to weaken the finished cylinder. A reasonably smooth and uniform surface finish is required. No abrupt change in wall thickness is permitted. Welding shall be performed in accordance with AWS D17.1,
§ 178.47(f) Wall thickness.

The minimum wall thickness must be such that the wall stress at the minimum specified test pressure may not be over 60,000 psig. A minimum wall thickness of 0.040 inch on the cylindrical section and 0.035 inch on the hemispherical head of the container is required.

(1) ***

(2) ***

§ 178.47(g) Heat treatment. ***

§ 178.47(h) Openings in container.

The cylinder end has an extruded flare, allowing for fitting/bung attachment via fusion weld. Fitting threads are specified as 1/4-18 ANPT per AS71051.


Not applicable. Instead, each cylinder is tested for leakage with the cylinder charged with test gas (oxygen, nitrogen, or air) to a pressure of 500 psig, while submerged in water for 2 minutes. All parts of the cylinder shall be covered with not less than 1 inch of water. For acceptable result, the cylinder shall show no evidence of leaks when tested as specified.

§ 178.47(j) Pressure testing

Each cylinder shall be hydrostatically tested in a water jacket to a pressure of 750 psig for a period of not less than 1 minute, and permanent volumetric expansion determined. The expansion shall be determined to an accuracy of 1 percent or 0.1 of a cubic-centimeters and shall be recorded. Permanent volumetric expansion may not exceed 10 percent of the total volumetric expansion at test pressure.

§ 178.47(k) Radiographic inspection.

The welded sections of cylinders shall pass the inspection requirements of AWS D17.1.

§ 178.47(l) Burst test.
(a) One cylinder taken at random (from sample size per ANSI/ASQ Z1.4 & MIL-DTL-5586) shall be hydrostatically pressurized for 3 minutes to within 95% of the specified minimum burst pressure of 1000 psi. The cylinder shall then be hydrostatically tested to destruction and the bursting pressure recorded. The cylinder must remain in one piece.

(b) Macrostructure test: Longitudinal sections taken from the burst cylinder shall be etched in an aqueous solution containing 50 percent hydrochloric acid by volume and maintained at a temperature of approximately 160 deg F for sufficient time to show the presence of defects. The sections shall then be visually examined and shall show no evidence of abnormal segregation, pipes, cracks, carbide defects, seams, or abnormal change in structure from the surface to the center.

§ 178.47(m) Flattening test.

Not required. Instead, as part of first article testing, a fragmentation resistance test with 50 caliber M-2 armor piercing ammunition with muzzle velocity of 2,800 +/- 100 feet per second shall be performed on cylinder charged to rated pressure with air at ambient temperature. The cylinder must remain in one piece and exhibit no evidence of shattering.

c. OPERATIONAL CONTROLS:

(1) The cylinders will be shipped one way via truck from Boeing Seattle Delivery Center (Located at 7500 E Marginal Way S, Seattle, WA 98108) to Boeing Plant II (Located at 7755 E Marginal Way S, Seattle, WA 98108) to the Boeing Everett Factory (Located at 3003 Casino Rd, Everett, WA 98204).

(2) The shipping paper must identify the cylinders with the special permit number “DOT-SP 21282”.

(3) Only the grantee may act as an offeror under the terms of this special permit.

(4) Emergency response information provided with the shipment and available via an emergency response telephone number must indicate that the cylinders are not fitted with pressure relief devices and provide appropriate guidance for exposure to fire.

(6) The cylinders are authorized for use as components of emergency equipment installed on military aircraft only.

(7) The cylinders must be shipped in strong outside packagings in
conformance with § 173.301(a)(9).

(8) Marking: The special permit marking on the cylinder is waived. However, the outside shipping packaging must be suitably labelled with the marking, “DOT-SP 21282”.

8. SPECIAL PROVISIONS:

a. 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.

b. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each motor vehicle used to transport packages covered by this special permit.

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 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.:

[Signature]

for William Schoonover
Associate Administrator for Hazardous Materials Safety


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: TG