U.S. Department
of Transportation

**Research and
Special Programs
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

DOT-E 10433 (EXTENSION)
ORIGINAL June 23, 1992

APR 23 1996

In accordance with 49 CFR 107.105 of the Department of Transportation (DOT) Hazardous Materials Regulations DOT-E 10433 is hereby extended for the party(ies) listed below by changing the expiration date in paragraph 10 to March 31, 1998. This change is effective from the issue date of this extension. All other terms of the exemption remain unchanged.

This extension applies only to party(ies) listed below based on the application(s) received in accordance with 49 CFR 107.105. This extension constitutes a necessary part of this exemption and must be attached to it.

for Marilyn E. Morris
Alan I. Roberts
Associate Administrator
for Hazardous Materials Safety

APR 23 1996
(DATE)

Dist: FHWA

EXEMPTION HOLDER	APPLICATION DATE
Allied-Signal, Inc. Tempe, AZ	February 28, 1996

Expired - NOT ACTive

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DOT-E 10433

1. Allied Signal Aerospace Company, Garrett Fluid Systems Division (GFSD), Tempe, Arizona is hereby granted an exemption from certain provisions of this Department's Hazardous Materials Regulations to manufacture, mark, and sell the packaging described in paragraph 7 below for use in the transportation in commerce of the compressed gas described in paragraph 3 below, subject to the limitations and special requirements specified herein. This exemption authorizes the manufacture of a non-DOT specification welded pressure vessel similar to a DOT-3HT cylinder with certain exceptions and provides no relief from any regulation other than as specifically stated.

2. BASIS. This exemption is based on Allied Signal Aerospace Company's applications dated July 6, 1990, and January 6, 1992, and additional information dated April 22, 1992 submitted in accordance with 49 CFR 107.103 and the public proceeding thereon.

3. HAZARDOUS MATERIALS (Descriptor and class). Helium, classed as a nonflammable gas.

4. PROPER SHIPPING NAME (49 CFR 172.101). Helium.

5. REGULATION AFFECTED. 49 CFR 173.302(a)(2), and 178.44.

6. MODES OF TRANSPORTATION AUTHORIZED. Motor vehicle.

7. SAFETY CONTROL MEASURES. Packaging prescribed is a non-DOT specification welded, cylindrical pressure vessel having 20 cubic inches nominal capacity and 10,000 psi nominal service pressure. The pressure vessel will be filled with compressed, nonliqeified helium gas. The pressure vessel must be designed to conform with NAVSEA Drawing number 53711-5820338 submitted and on file with the Office of Hazardous Material Exemptions and Approvals and with DOT Specification 3HT (49 CFR 178.44) except as follows:

178.44-2 Type, Size, and Service Pressure

(a) Welded cylindrical pressure vessel with integral heads and one threaded opening as shown in NACSEA Drawing #53711-5820338. Water capacity not to exceed 20 cubic inches.

(b) Service pressure not over 10,000 psig at 70°F.

178.44-5 Authorized Steel

(a) "Nitronic 40" Austenitic stainless steel conforming with SAE AMS5656 (bar), SAE AMS5656 (weld rod) and SAE AMS5595 (plate) for chemical composition.

178.44-8 Manufacture

(a) By best appliances and methods; Dirt and scale to be removed as necessary to afford proper inspection. Deep drawn shells must be welded into the drawing configuration. Welding shall be in accordance with MIL-W-8611. All welds must be 100 percent penetrant and radiograph inspected after 17,000 psig hydrostatic sizing and 900°F normalizing.

178.44-9 Welding or Brazing

(a) Welding as prescribed in Section 178.44-8(a) above is authorized.

(b) * * *

178.44-11 Heat treatment

(a) The plate stock and cylinder halves may be stress relieved to facilitate forming. Each completed cylinder shall be normalized at 900 F for one hour to minimize residual stresses.

178.44-13 Safety devices and protection for valves, safety devices, and other connections if applied.

(a) The pressure relief device system must meet the requirements of 49 CFR 173.34(d). The pressure vessel is excepted from the requirements of Section 173.302(a)(2) but must conform to the following: The pressure vessel must be equipped with a pressure relief system incorporating a heat activated actuator in accordance with NAVSEA Drawings 53711-5820536, 53711-6277305 and 53711-6277273. The system shall activate within 15 minutes at 335°F to release all pressure, before bursting, if the pressure vessel is placed in a fire. An anti-propulsion provision shall be included in the design.

(b) * * *

178.44-14 Hydrostatic test

(a) * * *

(b) * * *

(c) * * *

(d) Each cylinder must be tested to at least 16,700 psi.

178.44-15 Cycling tests

(a) * * *

(b) * * *

(c) A lot is defined as a group of cylinders sequentially fabricated from the same heat of steel, manufactured by the same process, and stress relieved under the same conditions of time, temperature, and atmosphere, and shall not exceed a quantity of 200 cylinders.

(d) * * *

178.44-18 Physical tests

(a) To determine yield strength, tensile strength, elongation, and reduction of area of material: Required on three test specimens from each half of one randomly selected cylinder from each lot.

(b) The test specimens shall conform to ASTM E8, except grip length shall be modified as shown in the application for exemption. The specimen may be straightened or flattened cold by pressure only, not by blows. When specimens are so prepared, the inspector's report must show in connection with record of physical tests detailed information in regard to such specimens. Heating of specimen for any purpose is not authorized.

(c) * * *

178.44-19 Magnetic particle inspection

(a) In lieu of magnetic particle inspection, dye-penetrant inspection in accordance with MIL-STD-6866 is authorized.

(b) * * *

178.44-20 Leakage

(a) Each cylinder shall be tested for leaks in accordance with ASTM E499-73 while pressurized with helium at 10,000 psi nominal. Any leakage in excess of 1×10^{-6} standard cubic centimeters per second shall be cause for rejection.

(b) * * *

178.44-21 Acceptable results of tests

(a) * * *

(b) Physical tests:

(1) * * *

(2) Tensile strength shall not exceed 170,000 psi.

(c) * * *

(d) * * *

178.44-22 Rejected cylinders

(a) Renormalization is authorized after which the cylinder must pass all prescribed tests.

(b) Repair of welds is authorized after which normalizing is required and; subsequent thereto, acceptable pressure vessels must pass all prescribed tests.

178.44-23 Marking

(a) Cylinders shall be marked by low stress type methods such as electrochemical etch or vibropen in a way which does not decrease the integrity of the cylinder.

(1) Instead of "DOT-3HT", the pressure vessel must be marked with the DOT exemption number and the service pressure as shown below: "DOT-E 10433".

(2) * * *

(3) * * *

(4) Stamping of elastic expansion is not required.

(b) * * *

178.44-24 Name plates

(a) Name plates are not required.

(b) * * *

178.44-25 Inspectors report

(a) The inspectors report must be modified to reflect identification and compliance with this exemption.

(b) * * *

8. SPECIAL PROVISIONS.

a. Offerors for transportation of hazardous materials specified in this exemption may use the packaging described in this exemption for the transportation of such hazardous materials so long as no modifications or changes are made to the packages, all terms of this exemption are complied with, and a copy of the current exemption is maintained at each facility from which such offering occurs.

b. Shippers using the packaging covered by this exemption must comply with the shipping paper, marking, labeling, and placarding requirements of 49 CFR Part 172, all provisions of this exemption, and all other applicable requirements contained in 49 CFR Parts 100-180.

c. Each packaging manufactured under the authority of this exemption 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 for a specific manufacturing facility.

d. A copy of this exemption, in its current status, must be maintained at each manufacturing facility at which this packaging is manufactured and must be made available to a DOT representative upon request.

e. The outside of each package must be plainly and durably marked "DOT-E 10433".

f. The package is limited to 10 refills or a combined service and storage life of ten years.

9. REPORTING REQUIREMENTS. Any incident involving fire, packaging failure or loss of packaging contents must be reported to the Associate Administrator for Hazardous Materials Safety as soon as practicable. (49 CFR 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.)

10. EXPIRATION DATE. May 1, 1994.

Issued at Washington, D.C.:

JUN 23 1992

Alan I. Roberts
Associate Administrator
for Hazardous Materials Safety

(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, U.S. Department of Transportation, Washington, D.C., 20590. Attention: Exemptions Program.

Dist: FHWA.