U.S. Department
of Transportation

**Pipeline and
Hazardous
Materials Safety
Administration**

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

SEP 3 0 2005

DOT-E 8920
(SEVENTH REVISION)

EXPIRATION DATE: August 31, 2007

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Applied Companies
Valencia, CA

2. PURPOSE AND LIMITATION:

a. This exemption authorizes the manufacture, mark and sale of non-DOT specification, welded high pressure, non-refillable cylinders in military weapons systems only. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.

b. The safety analyses performed in development of this exemption 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), 175.3, in that a non-DOT specification cylinder is not authorized except as specified herein.

5. BASIS: This exemption is based on the application of Applied Companies dated August 30, 2005, submitted in accordance with § 107.109.

SEP 30 2005

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Materials Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi-fication Number**	**Packing Group**
Air, compressed	2.2	UN1002	n/a
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: Prescribed packaging is a non-DOT specification non-reusable (non-refillable) cylinder having a 75 cubic inches maximum water capacity, made of AISI 4130 steel, in compliance with P/N 254-47 dated November 24, 1980. Design qualification tests as outlined in the application dated August 23, 1982, must have been performed prior to initial production. In addition, the cylinder must also comply with the following:

1. Service pressure and test pressure.

   The cylinder must have a marked service pressure of 10,000 psi. The minimum test pressure is the maximum pressure of the contents at 130°F. The maximum test pressure must be as required in the paragraph on wall thickness and must not exceed 18,000 psi.

2. Inspection.

   (a) Inspections and verifications must be performed by an independent inspection agency approved in writing by the Associate Administrator, Office of Hazardous Materials Safety (OHMS) in accordance with § 173.300a. Chemical analyses and tests as specified must be made within the United States, unless otherwise approved in writing by the Associate Administrator, OHMS, in accordance with § 107.807(a).

(b) The inspector must determine that all material used complies with the requirements of this exemption.

(c) The inspector must verify chemical analysis by making a chemical analysis or obtaining a certified chemical analysis from the material manufacturer for each heat of material (ladle analysis acceptable). If an analysis is not provided by the material manufacturer, a sample from each coil, sheet or tube must be analyzed.

(d) The inspector must determine that each cylinder is made and marked in compliance with this exemption by:

(1) Making complete internal and external inspection.

(2) Verifying heat treatment as proper.

(3) Selecting of samples to be tested; and

(4) Witnessing all tests.

(e) the inspector must verify that the prescribed qualification tests have been performed with acceptable results prior to initial production.

3. Wall thickness.

(a) Minimum wall thickness must be such that the wall stress at the minimum specified test pressure does not exceed the yield strength nor 81 percent of the minimum tensile strength of the steel, and must not be over 105,000 psi.

(b) Calculations must be made by the formula:

$$S= [P(1.3D^2+0.4d^2)]/[(D^2-d^2)]$$

Where

S=Wall stress in pounds per square inch;
P=Minimum test pressure prescribed
D=Outside diameter in inches
d=Inside diameter in inches

4. Safety devices.

Safety devices must meet the requirements of § 180.205.

5. Heat treatment

(a) The completed cylinders must be uniformly and properly heat-treated prior to tests. After heat treatment, cylinders must be inspected by the magnetic particle or dye penetrant method to detect the presence of quenching cracks. Any cylinder found to have a quenching crack must be rejected and may not be requalified.

6. Pressure tests.

(a) Each cylinder must be tested by water jacket method operated so as to obtain accurate data. Pressure gauge must permit reading to accuracy of 1 percent. Expansion gauge must permit reading of total expansion to accuracy of 1 percent or 0.1 cubic centimeter. Pressure must be maintained for 60 seconds. If due to failure of apparatus, the test pressure cannot be maintained, the test may be repeated at a pressure increased by 100 psi.

(1) Permanent volumetric expansion must not exceed 10 percent of total volumetric expansion.

(2) If the cylinder leaks, or evidences visible distortion or any other defect, while under test, it must be rejected.

(b) One cylinder taken from each lot must be hydrostatically tested to destruction. The entire lot must be rejected if:

(1) A failure occurs at a gage pressure less than 22,225 psi.

(2) A failure initiates in a weld or the heat affected zone thereof; or

(3) a failure is other than in the sidewall or a cylinder longitudinal with its long axis.

(c) A "lot" is defined as the quantity of cylinders not exceeding 1000 cylinders successively produced per production shift (not exceeding 10 hours) having identical size, design, construction, material, heat treatment, finish, and quality.

7. Flattening test.

(a) One cylinder must be taken from each lot as defined above and subjected to a flattening test.

(1) The flattening test must be made on a cylinder that has been tested at test pressure.

(2) A ring taken from a cylinder may be flattened as an alternative to a test on a completed cylinder. The test ring must not include the heat affected zone or any weld.

(3) The flattening must be between 60 degrees included-angle, wedge shaped knife edges, rounded to a 0.5 inch radius.

(4) cylinders and test rings must not crack when flattened so that their outer surfaces are not more than ten times wall thickness apart.

(b) If any cylinder or ring cracks when subjected to the specified flattening test, the lot of cylinders represented by the test must be rejected.

8. Rejected cylinders.

(a) If the cause for rejection of a lot is determinable, and if by test or inspection, defective cylinders are eliminated for the lot, the remaining cylinders may be qualified as a new lot.

(b) Repairs of the plug is permitted. Following repair, a cylinder must pass the pressure test specified.

(c) If a cylinder made from seamless steel tubing fails the flattening test, suitable uniform heat treatment must be used on each cylinder in the lot. All prescribed tests including magnetic particle or dye penetrant test must be performed subsequent to this heat treatment.

9. Markings.

(a) The markings required by this section must be durable and waterproof.

(b) Required markings are as follows:

(1) DOT-E 8920
(2) NRC
(3) The service pressure
(4) The test pressure
(5) The registration number (M****) of the manufacturer.
(6) The lot number or serial number.
(7) The date of manufacture if the lot number does not establish the date of manufacture.
(8)The following statement: Federal law forbids transportation if refilled. Penalty up to $25,000 fine and 5 years imprisonment (49 U.S.C. 1809).

(c) The markings required by paragraph (b)(1) through (5) of this section must be in numbers and letters at least 1/8 inch high and displayed sequentially. For example: DOT-E 8920 NRC 250/500 M1001.

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, may reoffer it

for transportation provided no modifications or changes are made to the package and it is offered for transportation in conformance with this exemption and the HMR.

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

d. 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 by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

e. A current copy of this exemption must be maintained at each facility where the package is manufactured under this exemption. It must be made available to a DOT representative upon request.

f. These cylinders must be used in military weapons systems only.

g. These cylinders must be shipped in strong outside packagings in accordance with § 173.301(a)(9).

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

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each aircraft used to transport packages covered by this exemption. The shipper must furnish a current copy of this exemption 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 exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.

- Persons operating under the terms of this exemption 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 exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this exemption 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 exemption must notify the Associate Administrator for Hazardous Materials Safety -- OHMEA, in writing, of any incident involving a package, shipment or operation conducted under terms of this exemption.

Issued in Washington, D.C.

Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

SEP 30 2005
DATE

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 exemption may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/exemptions Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: AM