



**MAR 22 2004**

DOT-E 12988  
(FIRST REVISION)

EXPIRATION DATE: April 30, 2005

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Air Products and Chemicals, Inc.  
Allentown, PA
2. PURPOSE AND LIMITATIONS:
  - a. This exemption authorizes the manufacture, marking, sale and use of a non-DOT specification cylinder conforming with all regulations applicable to a DOT specification 110A multi-unit tank car tank, except as specified herein, for the transportation in commerce of the material authorized by this exemption. 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 §§ 173.304 and 179.300 in that a non-DOT specification welded cylinder is not authorized except as specified herein.
5. BASIS: This exemption is based on the application of Air Products and Chemicals, Inc. dated January 16, 2004 submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR § 172.101): **MAR 22 2004**

<b>Hazardous Material Description</b>			
<b>Proper Shipping Name</b>	<b>Hazard Class/ Division</b>	<b>Identification Number</b>	<b>Packing Group</b>
Hydrogen chloride, anhydrous	2.3	UN1050	Hazard Zone C

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification cylinder designed, manufactured, and tested in accordance with Air Products and Chemicals, Inc. (APCI) drawing number TK5-845.01, Rev. d1, the supporting documentation on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA) and with DOT Specification 110A (§ 179.300) except as specified herein and meeting the following requirements:

- (1) Cylinder must be manufactured using equipment and processes adequate to ensure that each cylinder produced conforms to the requirements of this exemption.
- (2) The cylinder has a: maximum outside diameter (nominal) of 900 mm (35.4 inches); maximum height of 2,210 mm (87 inches); and maximum water volume of 1000 liters.
- (3) Material of construction must meet the ASTM A-516-70.
- (4) The minimum thickness after forming of the body shells must be 20 mm (0.787 inch).
- (5) The welded joint efficiency is 1.0.
- (6) Each cylinder head must be one piece formed of seamless construction and must be full penetration fusion welded to the shell.

MAR 22 2004

(7) All welding, weld procedures, weld performance qualifications, postweld heat treatment procedures, and operators used to fabricate a cylinder under this exemption must be in accordance with the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code, Section VIII, Division 1 and approved by an inspection agency that is approved by the OHMEA.

(8) Cylinder valves and fittings must be protected from any damage which may result in a leak during transportation.

(9) Valves for venting, loading and unloading must comply with the requirements of § 179.300-13.

b. TESTING -

(1) Design Qualification:

(i) Upon initiation of production, production on new tooling, modification of the production process or change in the design, one cylinder taken at random from the first 10 finished vessels, must be hydrostatically pressurized to a minimum burst pressure 249 bar (3611 psi) without rupture or leakage.

(ii) One cylinder taken at random from the first 10 finished vessels, must have tensile tests performed on specimens taken from each head, the body section and across the body seam. Two weld bend specimens must be taken from the body seam. All specimens are to be prepared and tested in accordance with ASME, Section VIII, Division 1. Tensile values and elongation values must not be less than that specified in § 179.300-7. Bend specimens must show no evidence of cracking.

(2) Production Testing:

(i) One cylinder from each lot of 200 consecutively produced must be tested to the minimum burst pressure without rupture or leakage. Additionally, when production has been suspended for more than 30 days, one cylinder taken at random from the first 30 finished vessels must be

MAR 22 2004

tested to the minimum burst pressure without rupture or leakage. All other cylinders must be hydrostatically tested to a test pressure of 120 Bar (1740 psi) in a water-jacket, or direct expansion or other suitable method, and operated so as to obtain accurate data. Alternate methods of testing must be approved in writing by the OHMEA. The pressure gauge must permit readings to an accuracy of 1 percent. The expansion gauge must permit readings of total volumetric expansion to an accuracy either of 1 percent or 0.1 cubic centimeter.

(A) Pressure must be maintained at test pressure for at least 30 seconds and sufficiently longer to ensure complete expansion. Any internal pressure applied after heat treatment and prior to the official test may not exceed 90 percent of the test pressure.

(B) Permanent volumetric expansion may not exceed 10 percent of the total volumetric expansion at test pressure.

(ii) The longitudinal shell joints and head to body shell girth joints must be 100% radiographed on each cylinder. Radiographic records for each cylinder must be maintained by the manufacturer for 15 years after the date of manufacture.

(iii) Tensile tests and check analysis must be performed on each heat of material before it may be released for production.

(3) Periodic retest and inspection - Each cylinder must be retested and inspected in accordance with § 180.519 as specified for DOT Specification 110A1000-W. The retest and reinspection must be performed by a facility which holds a current retester identification number issued by the Associate Administrator for Hazardous Materials Safety, OHMEA.

c. MANUFACTURE - The manufacturer of a cylinder under this exemption must secure an approval in accordance with the provisions of 49 CFR Part 107, Subpart H that apply.

MAR 22 2004

d. INSPECTION - Compliance with the requirements of § 178.35 is required prior to production of a cylinder under this exemption.

e. REPAIR - All repairs to a cylinder authorized by this exemption must be performed under the direct guidance of the original manufacturer and supervision of the inspection agency approved by OHMEA. The repairs must be certified by the original manufacturer and be submitted to the OHMEA.

f. OPERATIONAL CONTROLS -

(1) The filling ratio must be such that the settled pressure at 65°C does not exceed the test pressure of the cylinder (120 bar).

(2) Each cylinder must remain in dedicated product service for its entire life.

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 marked with the DOT registered Approval number issued by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility in accordance with the Approval Requirements stated in paragraph 7c.

MAR 22 2004

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. A cylinder manufactured under this exemption must be in conformance with Air Products and Chemical, Inc. (APCI) drawing number TK5-845.01, Rev. d1 except that whenever a provision of this exemption is in conflict with the drawing, APCI must comply with the conditions of this exemption and make appropriate revisions to the drawing(s). Revisions to drawings must be prepared by the manufacturer and be reviewed by the approved inspection agency. Later drawings and revisions are considered a part of this exemption when requested by the approved inspection agency and approved in by OHMEA.

g. Each cylinder must be marked by stamping permanently and plainly in letters and figures at least 9.525 mm (3/8 inch) high into the metal of valve end chime as follows:

DOT E-12988/120 Bar  
516/WC XXXXXX

DOT Registration Approval Number/Serial No.  
Inspection Agency Registered Mark/Test Date

Note: Variations to the required marking must be approved in writing by the Associate Administrator for Hazardous Materials Safety.

h. OHMEA may require the testing under prescribed conditions of any cylinder when probable cause appears for suspecting that a cylinder is in an unsafe operating condition in accordance with the requirements specified in § 180.509(b).

i. Any cylinder not used for the transport of the hazardous materials authorized under this exemption for a period of 1 year or more must be successfully retested and inspected in accordance with § 180.519 as specified for DOT 110A1000-W prior to being returned to hazardous material transportation service.

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

MAR 22 2004

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MAR 22 2004

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each motor vehicle and cargo vessel used to transport packages covered by this exemption.
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:
- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
  - o Registration required by § 107.601 et seq., when applicable.

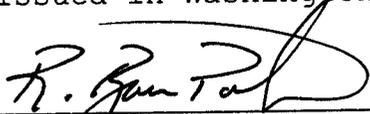
Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

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:

- a. Air Products and Chemicals, Inc. must report and fully describe all repairs made to cylinders authorized by this exemption on an annual basis to OHMEA.
- b. The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must also inform the AAHMS, in writing, as soon as practicable of any incidents involving the package and shipments made under this exemption.

Issued in Washington, D.C.:



Robert A. McGuire  
Associate Administrator for  
Hazardous Materials Safety

MAR 22 2004

(DATE)

MAR 22 2004

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.  
Attention: DHM-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: MMToughiry