



DEC 9 2003

DOT-E 13220

EXPIRATION DATE: November 30, 2005

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Advanced Technology Materials, Incorporated
Danbury, CT

There will be no parties granted to this exemption.

2. PURPOSE AND LIMITATION:

- a. This exemption authorizes the transportation in commerce of certain non-DOT specification welded pressure vessels containing certain compressed gases and liquids adsorbed onto a microporous substrate. 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 §§ 173.192, 173.302(a), and 173.304(a) in that a non-DOT specification cylinder is not authorized, except as specified herein.
5. BASIS: This exemption is based on the application of Advanced Technology Materials, Inc. dated March 7, 2003 and additional information dated July 24, August 14, and August 22, 2003 submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR § 172.101): **DEC 9 2003**

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Ammonia Anhydrous	2.3 Hazard Zone D	UN1005	N/A
Arsine	2.3 Hazard Zone A	UN2188	N/A
Boron Trichloride	2.3 Hazard Zone C	UN1741	N/A
Boron Trifluoride, compressed	2.3 Hazard Zone B	UN1008	N/A
Carbon Monoxide, compressed	2.3 Hazard Zone D	UN1016	N/A
Chlorine	2.3 Hazard Zone B	UN1017	N/A
Compressed gas, n.o.s.	2.2	UN1956	N/A
Compressed gas, Flammable, n.o.s.	2.1	UN1954	N/A
Compressed gas, Toxic, n.o.s.	2.3 Hazard Zone A	UN1955	N/A
Compressed gas, Toxic, Corrosive, n.o.s.	2.3 Hazard Zone B	UN3304	N/A
Dichlorosilane	2.3 Hazard Zone B	UN2189	N/A
Germane	2.3 Hazard Zone B	UN2192	N/A
Hydrogen Bromide Anhydrous	2.3 Hazard Zone C	UN1048	N/A
Hydrogen Chloride Anhydrous	2.3 Hazard Zone B	UN1050	N/A
Hydrogen Selenide, Anhydrous	2.3 Hazard Zone A	UN2202	N/A

Hazardous Materials Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Hydrogen Sulfide	2.3 Hazard Zone B	UN1053	N/A
Methyl Mercapton	2.3 Hazard Zone C	UN1064	N/A
Nitric Oxide, compressed	2.3 Hazard Zone A	UN1660	N/A
Phosgene	2.3 Hazard Zone A	UN1076	N/A
Phosphorus Pentafluoride, compressed	2.3 Hazard Zone B	UN2198	N/A
Phosphine	2.3 Hazard Zone A	UN2199	N/A
Silane, compressed	2.1	UN2203	N/A
Silicon Tetrafluoride, compressed	2.3 Hazard Zone B	UN1859	N/A
Sulfur dioxide	2.3 Hazard Zone C	UN1079	N/A
Toxic Liquids, Flammable, Organic, n.o.s.	6.1 Hazard Zone B	UN2929	PG I
Tungsten Hexafluoride	2.3 Hazard Zone B	UN2196	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification, welded pressure vessel filled with a monolith solid microporous sorbent and/or bead type sorbent onto which the gas is adsorbed. The gas remains adsorbed during transportation in essentially a solid state. The system is filled and operated at sub-atmospheric pressures and is described as a sub-atmospheric gas delivery system (SDS). The welded pressure

DEC 9 2003

vessel may be of cylindrical or cube design. The pressure vessel must be designed and constructed by American Cap Company, Inc. in accordance with American Cap Company, Inc. drawing AC2314-C Rev F or AC2322-E Rev A on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA) and with the following specifications:

Capacity:	0.4 L to 12 Liters
Material:	Cold drawn over mandrel and/or cold deep drawn steel. ASTM Grade A-569 or A-570 modified steel with max carbon content 25%
Minimum sidewall thickness:	Cylindrical, 0.085 inch Cube, 0.12 inch
Maximum service pressure:	75 psig
Minimum test pressure:	300 psig
Minimum design burst pressure:	750 psig

(1) The pressure vessel must be manufactured in accordance with §178.35 except as follows:

§178.35(b) (2) Inspections and verifications must be performed by a competent inspector of the manufacturer.

§178.35(f) (1) (i) The pressure vessel must be marked "DOT-E 13220" followed by the service pressure in lieu of marking the DOT specification number. Markings must be stamped plainly and permanently in accordance with §178.51(n).

(2) The pressure vessel must be equipped with pressure relief devices as prescribed in §173.301(f) for the hazardous material being transported. Valve protection must be in accordance with §173.301(h).

(3) Openings and threads must be in accordance with 178.51(h).

(4) Pressure vessels must be manufactured in accordance with American Cap Company Inc., Cylinder Manufacturing procedure Doc. No. 10-007 and SDS Manufacturing Workflow Chart.

(5) Welding or brazing must be by automated processes. Welding procedures and operators must be qualified in accordance with CGA Pamphlet C-3. Welded pressure vessels containing the sorbent material are not heat treated after the welding or brazing operation.

(6) Test of welds must be performed in accordance with §178.51(1).

(7) At least one completed pressure vessel selected at random per lot of 200 or less must be hydrostatically tested to failure or to at least 750 psig. The test will be performed without sorbent present. The pressure vessel must not show evidence of leakage or damage below 750 psig. All pressure vessels used in the burst test must be destroyed.

b. TESTING - Each pressure vessel must be retested every 10 years as follows:

The pressure vessel must be evacuated and filled with Helium, to at least 300 psig. The pressure vessel must be placed in a vacuum chamber and the chamber evacuated to 10^{-6} torr. The pressure vessel must be held in the chamber for at least 10 minutes and the leak rate determined. The leak detection equipment must be calibrated for each test with nominal detection limits of 1×10^{-10} atm. cc/sec. The pressure vessel must be rejected if the leak rate is greater than 1×10^{-8} atm. cc/sec.

c. OPERATIONAL CONTROLS -

(1) Prior to the first filling, each completed pressure vessel with sorbent must be vacuum baked at a maximum temperature of 180°C to remove any contaminants.

(2) Prior to filling with the gas, each completed pressure vessel containing the sorbent and with the valve attached must be proof pressure tested to at least 300 psig and helium leak tested per the test method in Paragraph 7.b. of this exemption.

DEC 9 2003

(3) Only ATMI or its agents authorized and trained by ATMI may fill the pressure vessels.

(4) The maximum pressure inside the pressure vessel at 140°F must be 30 psig.

(5) Each pressure vessel must remain in dedicated product service for its entire life.

8. SPECIAL PROVISIONS

a. A person who is not a holder of this exemption who receives a package covered by this exemption may reoffer it for transportation provided no modification or change is made to the package or its contents and it is reoffered for transportation in conformance with this exemption and the HMR.

b. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation. Offerers of empty cylinders being returned for refilling are not required to have copies of this exemption.

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

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each motor vehicle, rail, or 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, 49 CFR Parts 171-180.

o Registration required by § 107.601 et seq., when applicable.

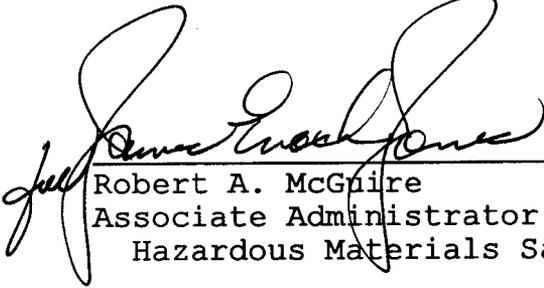
Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

DEC 9 2003

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

12. REPORTING REQUIREMENTS: 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 inform the AAHMS, in writing, of any incident involving the package and shipments made under the terms of this exemption.

Issued in Washington, D.C.:



Robert A. McGuire
Associate Administrator for
Hazardous Materials Safety

DEC 9 2003

(DATE)

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: cwf