

August 22, 2009



U.S. Department  
of Transportation

East Building, PHH-30  
1200 New Jersey Avenue S.E.  
Washington, D.C. 20590

**Pipeline and Hazardous  
Materials Safety Administration**

DOT-SP 4884  
(TWENTY SECOND REVISION)

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: (See individual authorization letter)
2. PURPOSE AND LIMITATION:
  - a. This special permit authorizes the transportation in commerce of certain Class 8 and Division 2.1, 2.2, 2.3 and 4.3 materials prescribed in paragraph 6 of this special permit in non-DOT specification cylinders. 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. Unless otherwise stated herein, this special permit consists of the special permit authorization letter issued to the grantee together with this document.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.201, 173.202, 173.302a, 173.304a, 173.323, and 175.3 in that non-DOT specification cylinders are not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of Praxair, Inc. dated June 1, 2009, submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

| Hazardous Materials Description                                                                               |                        |                       |                      |
|---------------------------------------------------------------------------------------------------------------|------------------------|-----------------------|----------------------|
| Proper Shipping Name                                                                                          | Hazard Class/ Division | Identification Number | Packing Group        |
| Ammonia, Anhydrous                                                                                            | 2.2                    | UN1005                | N/A                  |
| Boron Trichloride                                                                                             | 2.3                    | UN1741                | N/A<br>Hazard Zone C |
| Chlorine Trifluoride                                                                                          | 2.3                    | UN1749                | N/A<br>Hazard Zone B |
| Dichlorosilane                                                                                                | 2.3                    | UN2189                | N/A<br>Hazard Zone B |
| Ethylene oxide                                                                                                | 2.3                    | UN1040                | N/A<br>Hazard Zone D |
| Liquefied and non-liquefied compressed gases authorized for transportation in DOT Specification 4BW cylinders | 2.1 or 2.2             | As appropriate        | N/A                  |
| Silicon Tetrachloride                                                                                         | 8                      | UN1818                | II                   |
| Trichlorosilane                                                                                               | 4.3                    | UN1295                | I                    |

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification steel cylinder conforming with DOT Specification 4BW (§ 178.61) except as follows:

§ 178.61(b) - *Authorized steel*

The material of construction must be ASTM A240 Type 304, Type 316 or Type 316L stainless steel. The tensile strength measured from a specimen taken from a completed cylinder may not exceed 95,000 psi. Tensile tests must be performed as specified in § 178.61(l).

§ 178.61(g)- *Heat treatment*

The cylinders do not have to be heat treated.

§ 178.61(j)- *Physical tests*

Applies except that specimens must be taken from one cylinder not heat treated.

§ 178.61(o) - *Marking*

Applies except that each cylinder must be marked "DOT-SP 4884" in lieu of "DOT 4BW".

b. TESTING - Cylinders must be requalified in accordance with the requirements of § 180.209 as applicable to the DOT 4BW cylinder.

c. OPERATIONAL CONTROLS -

(1) Cylinders used for the transportation of dichlorosilane, boron trichloride, and chlorine trifluoride must be fabricated from type 316 or type 316L stainless steel and be equipped with a pressure relief device as specified in CGA Pamphlet S-1.1:2005. If a CG-4 type pressure relief device is used, the minimum burst pressure of the rupture disc must be 250 psig and the minimum melting temperature of the fusible material must be 165°F. Combination rupture discs having a minimum burst pressure rating in excess of 3,000 psig and a minimum melting temperature of the fusible metal of 165°F are also authorized. Additionally, each cylinder must conform with one of the following:

(i) Each cylinder must have a nominal water capacity not exceeding 90 pounds, a nominal inside diameter of 8.625 inches or an outside diameter of 9.0 inches, and a nominal wall thickness of 0.090 inch; or

(ii) Each cylinder must have a nominal water capacity of 1,000 pounds, a nominal outside diameter of 29.75 inches, and a nominal wall thickness of 0.175 inch. Each cylinder must be overpacked as shown in Union Carbide Corporation, Linde Division drawings PSG-A-1258 and PSG-B-1260 on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA).

(2) Each cylinder, having nominal water capacity of 1,000 pounds used to transport Division 2.1 (flammable gases) by cargo vessel, must be equipped with a spring loaded reclosing pressure relief valve. The relief valve must be designed to relieve at a pressure not less than 75 percent nor more than 100 percent of the cylinder's minimum required test pressure, and must have sufficient capacity to limit cylinder pressure to 150 percent of its design pressure.

(3) Each cylinder used for the transportation of ethylene oxide may not have a capacity exceeding 115 liters (30 gallons). Each cylinder must be equipped with safety devices of the fusible plug type with threaded straight bore orifice, with a yield temperature of 157° to 170°F, having a minimum vent area of 0.0055 square inch per pound of water capacity for packagings not over 1-gallon capacity and 0.0012 square inch per pound of water capacity for all packagings over 1-gallon capacity. Each cylinder must be tested for leakage at a pressure of at least 15 psig with an inert gas before each refilling. Fillings must be such that the packaging will not be liquid full at 185° F. Pressurizing valves must be provided for all packaging over one gallon capacity. Educator tubes must be provided for all packagings over 5-gallon capacity. Cylinders having a water capacity in excess of one gallon must be insulated.

(4) Each cylinder used for the transportation of ammonia must have a minimum service pressure of 480 psig.

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this special permit who receives a package covered by this special permit may reoffer it for transportation provided no modification or change is made to the package and it is reoffered 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.

c. Packages specified herein marked "DOT SP 4884" prior to the issuance of this special permit may be transported under the terms of this special permit.

d. Shipments by air are subject to the restrictions and quantity limitations of § 172.101.

e. The following additional requirements apply to the transportation of dichlorosilane, boron trichloride and chlorine trifluoride:

(1) Dichlorosilane, boron trichloride, and chlorine trifluoride are limited to transportation by motor vehicle and cargo vessel.

(2) For water transportation, the packagings must be stowed "on deck" only, as far away from crew's quarters, other normally manned spaces and air intakes as reasonably practical.

(3) When shipping packagings described in this special permit without a secondary overpack, the shipper must load the material and block and brace the material for transportation in accordance with a prepared plan, which precludes stacking (double decking).

(4) When shipments are made by contract carrier the freight container must be sealed. When shipments are made by private carrier the packages must be moved in an upright position and securely fastened. Intermediate pickups or deliveries are authorized when transported by private carrier within a 75-mile radius of a shipping point provided the other requirements of this special permit and the HMR are met and the packages are not removed from the vehicle while the intermediate pickups or deliveries are made. Shipments by "stake body" motor vehicles must be exclusive use vehicles carrying no other cargo with the load properly blocked and braced.

(5) When shipping overpacked packagings described in this special permit, the overpack must be as specified in § 173.25. The inside packaging must be isolated from the overpack by a shock-mitigating, non-reactive material. There must be a minimum of two inches of cushioning material around the body of the inner packaging, and at least three inches on the top and bottom, between the inner packaging and the overpack.

(6) In addition to the requirements of §§ 171.15 and 171.16, the OHMSPA, must be notified of any incident involving damage to the packaging or loss of contents of material shipped under this special permit. The

OHMSPA, must be advised of the causes of the incident and any remedial action taken, as a result of the incident as soon as practical after its occurrence.

(7) The OHMSPA, must be advised annually, within 30 days after the end of the calendar year, of the shipping experience of material covered by this approval. Failure to comply may result in immediate suspension of this special permit.

f. Transportation of Division 2.1 (flammable gases) and Division 2.3 (gases which are poisonous by inhalation) are not authorized aboard cargo vessel or aircraft unless specifically authorized in the Hazardous Materials Table (§ 172.101).

g. Transportation of oxygen by aircraft is only authorized when in accordance with § 175.501.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only (see paragraphs 8.f. and g. for restrictions).
10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel, aircraft or motor vehicle used to transport packages covered by this special permit. The shipper must furnish a current copy of this special permit to the air carrier before or at the time the shipment is tendered. (See paragraph 8(e) of this special permit on modal restrictions for certain materials.)
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.:



for Theodore L. Willke  
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Material Safety Administration, U.S. Department of Transportation, East Building PHH-30, 1200 New Jersey Avenue, Southeast, Washington, D.C. 20590.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at

[http://hazmat.dot.gov/sp\\_app/special\\_permits/spec\\_perm\\_index.htm](http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm)

Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: LM