



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

SEP 15 2004

DOT-E 12531
(SECOND REVISION)

EXPIRATION DATE: August 31, 2006

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Worthington Cylinder Corporation
Columbus, OH
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 4BW cylinder, except as specified herein, for the transportation in commerce of the materials 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 §§ 173.201, 173.202, 173.203, 173.302a(a)(1), 173.304a(a)(1) and 173.304a(a)(4)(ii) in that a non-DOT specification cylinder is not authorized except as specified herein.
5. BASIS: This exemption is based on the application of Worthington Cylinder Corporation dated August 17, 2004 submitted in accordance with § 107.109.

SEP 15 2004

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi- fication Number	Packing Group
Division 2.1 and 2.2 materials authorized in DOT 4BW cylinders	2.1 or 2.2	Various	N/A
Ammonia, anhydrous	2.3	UN1005	Hazard Zone D
Ammonia, anhydrous	2.2	UN1005	N/A
Boron trichloride	2.3	UN1741	Hazard Zone C
Chlorine trifluoride	2.3	UN1749	Hazard Zone B
Dichlorosilane	2.3	UN2189	Hazard Zone B
Ethylene oxide or Ethylene oxide with nitrogen up to a total pressure of 1MPa (10bar) at 50 degrees C	2.3	UN1040	Hazard Zone D
Silicon tetrachloride	8	UN1818	II
Trichlorosilane	4.3	UN1295	I
Division 3 liquids authorized in DOT 4BW cylinders	3	Various	II
Division 6.1 liquids authorized in DOT 4BW cylinders	6.1	Various	I, II, or III

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification cylinder designed and fabricated in accordance with DOT 4BW specification (§§ 178.35 and 178.61) except as follows:

SEP 15 2004

§ 178.35(f) *Markings.*

Applies except the cylinder must be marked with "DOT-E 12531" in lieu of "DOT 4BW" followed by the service pressure.

§ 178.61(b) *Authorized steel.*

The steel used must be ASTM A 240 Type 304L or 316L stainless steel in the fully annealed condition. Chemical compositions are as follows:

Composition (%) for ASTM A240

<u>Type</u>	<u>304L</u>	<u>316L</u>
Carbon (max.)	0.03	0.03
Manganese (max.)	2.00	2.00
Phosphorus (max.)	0.045	0.045
Sulphur (max.)	0.030	0.030
Silicon (max.)	1.00	1.00
Nickel	8.0-11.0	10.0-14.0
Chromium	18.0-20.0	16.0-18.0
Molybdenum	-----	2.0 - 3.0
Copper (max.)	-----	0.50
Iron	Balance	Balance

§ 178.61(f) *Wall Thickness.*

* * * *

(f) (3) 40,000 psi.

§ 178.61(g) *Heat treatment.*

Heat treatment is not permitted.

§ 178.61(i) *Hydrostatic test.*

(1) Each cylinder must be hydrostatically or pneumatically pressurized to a minimum of 2 times the cylinder service pressure and held at the test pressure for at least 10 seconds. The cylinder must show no defects.

(2) One finished cylinder selected at random out of each lot of 200 or less successively produced must be hydrostatically pressurized to 4 times the marked service pressure and held at that pressure for at least 60 seconds. The cylinder must not leak or burst.

§ 178.61(k) *Elongation.* Elongation must be at least 10% for specimens with a gauge length of 24t with a width not over 6t or a gauge length of 8 inches with a width not over 1 ½ inches.

b. TESTING - Each cylinder must be retested by the cylinder manufacturer or a person holding a current retester's identification number issued by the Research and Special Programs Administration. Each cylinder must be periodically retested every five years in accordance with the requirements specified in § 173.34(e) except as follows:

(1) Each cylinder used for a hazardous material non-corrosive to the cylinder must be externally visually inspected in accordance with CGA Pamphlet C-6. Following the visual inspection, each cylinder must be subjected to an internal hydrostatic pressure of at least 2 times the marked service pressure without determination of expansion. The cylinder must be carefully examined under test pressure and removed from service if a leak or other harmful defect exists.

(2) Each cylinder used for a hazardous material that is corrosive to the cylinder must be visually inspected internally and externally in accordance with CGA Pamphlet C-6. Following the visual inspection, each cylinder must be subjected to an internal hydrostatic pressure of at least 2 times the marked service pressure with determination of expansion. The cylinder must be carefully examined under test pressure and removed from service if a leak or other harmful defect exists. The cylinder must be condemned if the permanent expansion exceeds 10% of the total expansion.

c. OPERATIONAL CONTROLS -

(1) The quantity limitations in § 172.101, Column 9(B) apply to shipments made under this exemption.

(2) The following additional requirements apply to the transportation of dichlorosilane, boron trichloride and chlorine trifluoride:

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

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

(iii) When shipping packagings described in this exemption without a secondary overpack, the shipper must load the material, block and brace the material for transportation in accordance with a prepared plan which precludes stacking (double decking) and the freight container, or van type motor vehicle must be sealed. Shipments in freight containers and motor vehicles must be from one origin to one destination only. No intermediate pick-up or delivery is authorized.

(iv) Shipments by "stake body" motor vehicles must be properly blocked and braced in exclusive use vehicles carrying no other cargo.

(v) When shipping overpacked packagings described in this exemption, the overpack must be as specified in § 173.25. The inside packaging must be isolated from the overpack by a shock-mitigating, non-reactive cushioning 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.

SEP 15 2004

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 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.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, and cargo aircraft only. See paragraph 7.c.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel, aircraft or motor vehicle used to transport packages covered by this exemption. The shipper must furnish a 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:

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

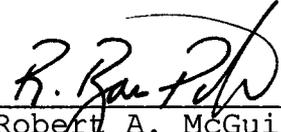
- o Persons operating under the terms of this exemption must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
- o Registration required by § 107.601 et seq., when applicable.

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 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 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

SEP 15 2004

(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/sln