



U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

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

MAR 29 2004

DOT-E 11005  
(NINTH REVISION)

EXPIRATION DATE: February 28, 2006

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Carleton Technologies, Inc., Pressure Technology  
Division  
Westminster, MD
2. PURPOSE AND LIMITATIONS:
  - a. This exemption authorizes the manufacture, mark, sale and use of non-DOT specification fiber reinforced plastic (FRP) full composite (FC) aluminum cylinders for the transportation in commerce for the transportation in commerce of the materials authorized by this exemption. This exemption provides no relief from any 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), 173.304a(a) and 175.3 in that non-DOT specification cylinders are not authorized, except as specified herein.
5. BASIS: This exemption is based on the application of Carleton Technologies, Inc. dated February 27, 2004, submitted in accordance with § 107.109.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi- fication Number	Packing Group
Air, compressed (containing up to 39% by volume oxygen)	2.2	UN1002	N/A
Argon, compressed	2.2	UN1006	N/A
Carbon dioxide	2.2	UN1013	N/A
Helium, compressed	2.2	UN1046	N/A
Hydrogen, compressed	2.1	UN1049	N/A
Methane, compressed or Natural gas, compressed (with high methane content)	2.1	UN1971	N/A
Nitrogen, compressed	2.2	UN1066	N/A
Oxygen, compressed	2.2	UN1072	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a non-DOT specification fiber reinforced plastic (FRP) full composite (FC) aluminum cylinder made in conformance with the following:

(1) PTI's Qualification Test Reports, Design/Analysis Reports, and Reports of Design Qualification Testing on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA) prior to first shipment, and

(2) DOT FRP-1 Standard (§ 178.AA) Revision 2 dated February 15, 1987 contained in Appendix A of this exemption, except as follows:

§ 178.AA-2 Type, size and service pressure. PTI's Type 3FC consisting of resin impregnated continuous filament windings in both longitudinal and circumferential directions over a seamless aluminum liner made in compliance with § 178.AA-6; not over 200 pounds water capacity; and service pressure at least 900 psig but not greater than 5,000 psig.

§ 178.AA-15 Marking.

(a) \* \* \*

(b) Required markings are as follows:

(1) "DOT-E 11005" followed by the service pressure.

(2) A serial number and an identifying symbol (letters); location of number to be just below or immediately following the DOT mark; location of symbol to be just below or immediately following the number. The symbol and numbers must be those of the manufacturer. The symbol must be registered with the Office of Hazardous Materials Exemptions and Approvals; duplications not authorized.

\* \* \*

b. TESTING -

(1) The FRP-1 Standard cycling test (§ 178.AA-12(b)) may be conducted at a rate of up to 10 cycles per minute, provided that the minimum dwell time in the pressure range of 90 and 100 percent of the service pressure may not be less than 1.2 seconds.

(2) In lieu of testing for fiber strength per FRP-1 Standard (§ 178.AA-5 (b)) by the cylinder manufacturer, a certificate by the fiber manufacturer is acceptable provided that the cylinder manufacturer's material specification document specifies strength and quality requirements and that the supplied material meets those requirements.

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. 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.

e. Cylinders may not be used for underwater breathing purposes.

f. Cylinders used in oxygen service must conform with §§ 173.302(b)(1) through (b)(4).

g. Cylinder service life may not exceed 15 years from the date of manufacture as marked on the cylinder.

h. Each cylinder must be reinspected and hydrostatically retested every three years in accordance with § 180.213(c)(2), as prescribed for DOT 3HT specification cylinders, except that the rejection elastic expansion does not apply and the permanent volumetric expansion may not exceed 5 percent of the total volumetric expansion at test pressure. Retest dates must be stamped on the exposed metallic surface of the cylinder neck or marked on a label securely affixed to the cylinder and overcoated with epoxy near the original test date.

Reheat treatment or repair of rejected cylinders is not authorized. When a hydrostatic retest is repeated as provided for in § 180.205(f), only two such retests are permitted.

i. No person may perform inspection and testing of cylinders subject to this exemption unless that person (1) maintains a current copy of this exemption at the location of such inspection and testing, and (2) complies with all the terms and conditions of this exemption. The marking of the retester's symbol on the cylinders certifies compliance with all of the terms and conditions of this exemption.

- j. A cylinder that has been subjected to fire may not be returned to service.
- k. Transportation of flammable gases is not authorized aboard cargo vessel or aircraft.
- l. Cylinders must be shipped in strong outside packaging in accordance with § 173.301(a)(9).
- m. This exemption authorizes the prescribed cylinders only for normal transportation as an article of commerce i.e., the movement of hazardous materials packages from consignor to consignee.
- n. Filling requirements are subject to all terms contained in § 173.302a for DOT 3AL specification cylinders.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, and cargo aircraft only. (See paragraph 8(k) of this exemption.)
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel and 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:
- 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 the 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.

*for*   
Robert A. McGuire  
Associate Administrator for  
Hazardous Materials Safety

MAR 29 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: KFW/sln