U.S. Department
of Transportation
**Research and
Special Programs
Administration**

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

OCT 22 2001

DOT-E 12564
(FIRST REVISION)

EXPIRATION DATE: December 31, 2002

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Carleton Technologies Inc.
Orchard Park, NY

2. PURPOSE AND LIMITATIONS:

a. This exemption authorizes the manufacture, marking, sale and use of a nonrefillable, non-DOT specification cylinder conforming with all regulations applicable to a DOT Specification 39 cylinder, except as specified herein, for the transportation in commerce of helium. Each cylinder is equipped with a pyrotechnic relief device and is part of a gas storage system. This exemption provides no relief from any Hazardous Materials Regulation (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 §§ 173.302(a) and 175.3 in that the use of a non-DOT specification cylinder is not authorized except as specified herein.

5. BASIS: This exemption is based on the application of Carleton Technologies Inc. dated February 1, 2001, and the additional information dated March 7 and March 28, 2001 submitted in accordance with § 107.105 and the public proceeding thereon.

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6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi- fication Number	Packing Group
Helium, compressed	2.2	UN1046	N/A

NOTE: For the purpose of this exemption, a gas cylinder, system or component which contains a quantity of pyrotechnic materials must be classed and approved as provided for in § 173.56. If the pyrotechnic material augments the volume of the gas in the cylinder, or in any way enhances the performance of the compressed gas, the device must be tested in the same configuration as when shipped.

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification nonrefillable welded stainless steel cylinder equipped with a Division 1.4S pyrotechnic pressure relief device conforming with Carleton Technologies Inc.'s drawings B43547 dated October 2, 2000, and B43628, Rev. B on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). The cylinder must be in conformance with DOT Specification 39 (§§ 178.35 and 178.65) except as follows:

§ 178.65(a) *Type, size, service pressure and test pressure.* Welded, or brazed stainless steel shells consisting of cylindrical/spherical halves.

(1) *Size limitation.* Maximum water capacity may not exceed 18.5 cubic inches with a maximum service pressure of 10,200 psig at 73°F or 26.5 cubic inches with a maximum service pressure of 11,100 psig at 73°F.

(2) *Test pressure.* The minimum test pressure for both the 18.5 and 26.5 cubic inch cylinders is 16,150 psig.

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§ 178.65(b) *Material.* The cylinder must be constructed of PH13-8Mo H1025 stainless steel.

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§ 178.65(c) *Manufacture.*

(1), (2), and (3) * * *

(4) Welding/brazing procedures and operators must be in accordance with CGA Pamphlet C-3 or MIL-STD-2219 and MIL-B-7883.

(5) Inspection of welds must be in accordance with MIL-STD-453, MIL-STD-6866 and acceptance criteria of MIL-STD-1907 and 1264 respectively as stated on the drawings on file with OHMEA.

§ 178.65(f) *Pressure tests.*

(1) Each cylinder must be tested at an internal pressure of at least 16,150 psig, and must be held at that pressure for at least 30 seconds.

(2) One cylinder randomly selected from each lot must be hydrostatically tested to failure. The cylinder may be a complete assembly or individual bottles with a simulated housing and mating cylinder which replicates the complete assembly. The entire lot must be rejected (see § 178.65(h)) if:

(i) a failure occurs at a gauge pressure less than 2.25 times the marked service pressure;

(ii), (iii), (iv) * * *

(3) A "lot" is defined as the quantity of pressure vessels fabricated from the same heat of steel, manufactured by same process and heat treated in the same equipment under same conditions of time, temperature and atmosphere and shall not exceed a quantity of 500.

§ 178.65(g) *Flattening test.*

(1) One sample ring representative of the cylinder must accompany each lot. The sample ring must be from the same material and be subjected to the same heat treatment as the lot of cylinders.

(2) The sample ring representative of the cylinder may be flattened. The sample ring may not include the heat affected zone or any weld.

(3) (Add) Flattening between flat plates is authorized. Flattening must continue until test specimen fails.

(4) Sample rings may not crack when flattened so that their outer surfaces are not more than 12 times wall thickness apart.

The failure point must be recorded in the inspector's test report as multiples of the cylinder wall thickness.

(5) If any sample ring cracks when subjected to the specified flattening test, the lot of cylinders represented by the test must be rejected (see § 178.65(h)).

§ 178.65(i) *Markings.*

* * *

(2)(i) Each cylinder must be marked "DOT-E 12564" in lieu of "DOT-39".

(2)(viii) does not apply.

(3) * * *. For example:
DOT-E 12564 NRC 10200/16150 M <u>* * * *</u>.

b. <u>TESTING</u> - Prototype packagings must have been qualified under the qualification program as described in the application prior to initial shipment. Completely charged cylinders must be leak tested to ensure a maximum leakage rate of 1×10^{-5} scc/sec is not exceeded.

c. <u>OPERATIONAL CONTROLS</u> -

(1) A copy of the inspector's report required by § 178.35(g) for the first lot of cylinders must be submitted to the OHMEA prior to first shipment.

(2) The cylinder must be shipped in strong outside packagings in accordance with § 173.301(k).

(3) Each cylinder may be refilled a maximum of 3 times to the service pressure marked on the cylinder provided each cylinder is inspected and proof tested to 1.5 times the test pressure prior to refilling. The pressure vessel must only be refilled by Carleton Technologies. Topping off is considered a refill. Carleton Technologies must maintain a record of refills by serial number.

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 aircraft only.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard aircraft used to transport packages covered by this exemption. The shipper shall 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:

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

    - 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

OCT 22 2001
(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.

The original of this exemption is on file at the above office. Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

Copies of exemptions may be obtained from the AAHMS, U.S. Department of Transportation, 400 7th Street, S.W., Washington, DC 20590-0001, Attention: Records Center, 202-366-5046.

PO: SStaniszewski