



U.S. Department  
of Transportation

**Research and  
Special Programs  
Administration**

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

**SEP 1 2004**

DOT-E 10227  
(FOURTH REVISION)

EXPIRATION DATE: July 31, 2006

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: CAIRE, INC.  
Burnsville, MN
2. PURPOSE AND LIMITATIONS:
  - a. This exemption authorizes the manufacture, mark, sale and use of non-DOT specification, insulated cylinder conforming with all regulations applicable to a DOT specification 4L cylinder 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 §§ 173.316 and 175.3 in that a non-DOT specification cylinder is not authorized, except as specified herein.
5. BASIS: This exemption is based on the application of CAIRE, INC., dated August 17, 2004, submitted in accordance with § 107.109.

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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
Oxygen, refrigerated liquid ( <i>cryogenic liquid</i> )	2.2	UN1073	N/A

7. SAFETY CONTROL MEASURES: Prescribed packagings are insulated non-DOT specification cylinders conforming with MVE, Inc.'s models Stroller 50 or Hi Flow 50. The Stroller 50 and Hi Flow 50 liquid oxygen transport systems must conform with drawing C26970 Rev. C, other drawings on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA) and DOT 4L Specification (§ 178.57) except as follows:

§ 178.57(a) Type, size, service pressure and design service temperature.

Must be fusion-welded, with not over 1.3 liters water capacity and a service pressure not over 50 psig.

(2) Design service temperature. Must be -320°F or colder.

§ 178.57(d) Manufacture.

\* \* \*

(1) \* \* \*

(2) The inner vessel bottom head is convex to internal pressure.

(c) Applies the construction must be such that the total heat transfer, from the atmosphere at ambient temperature to the cylinder lading will not exceed 0.01 Btu per hour per °F temperature differential per pound of water capacity of the cylinder, but not to exceed 2.0 pounds of evaporated liquid oxygen per day.

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.

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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 modification or change is made to the package or its contents 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.

f. Drivers and air crews must have been instructed as to necessary safeguards and proper procedures in the event of unusual delay, fire or accident.

g. Each liquid oxygen transport system must be marked "DOT-E 10227" in letters at least 0.25 inches high on a contrasting background.

h. The transportation of oxygen by aircraft is only authorized when in accordance with § 172.102(c)(2) Special Provision A52 and §§ 175.85(h) and (i).

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle and cargo aircraft only.
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each aircraft or motor vehicle 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.:

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

**SEP 1 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: sln