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

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

DOT-E 4039 (PTE)
SECOND REVISION April 23, 1990

In accordance with 49 CFR 107.111 of the Department of Transportation (DOT) Hazardous Materials Regulations the party(ies) listed below is granted the status of party to DOT-E 4039. The expiration date of the exemption for the party(ies) is July 31, 1996.

This party status applies to the party(ies) listed below based on the application(s) submitted in accordance with 49 CFR 107.111 and the public proceeding thereon. All terms of the exemption remain unchanged. This authorization forms part of the exemption and must be attached to it.

SEP 30 1994

Suzanne Hedgepeth

Alan I. Roberts
Associate Administrator
for Hazardous Materials Safety

(DATE)

Dist: FHWA

| EXEMPTION HOLDER | APPLICATION DATE |
|---|---|
| BOC Gases<br>Murray Hill, NJ | August 19, 1994 |

ADVISORY

IF YOU ARE A HOLDER OF AN EXEMPTION THAT AUTHORIZES THE USE OF A PACKAGING WITH A MAXIMUM CAPACITY LESS THAN 450 L (119 GALLONS) OR A MAXIMUM NET MASS LESS THAN 400 KG (882 POUNDS), PLEASE BE ADVISED THAT YOUR EXEMPTION MAY NOT BE RENEWED BEYOND SEPTEMBER 30, 1996. IN ADDITION, NO NEW CONSTRUCTION OF PACKAGINGS WHICH FALL WITHIN THE NON-BULK CAPACITIES LISTED ABOVE ARE AUTHORIZED AFTER SEPTEMBER 30, 1994. THIS IS CONSISTENT WITH THE IMPLEMENTATION OF THE NEW PACKAGING REQUIREMENTS ADOPTED UNDER DOCKET HM-181. ANY APPLICATION SUBMITTED TO THIS OFFICE TO RENEW AN EXEMPTION BEYOND THE SEPTEMBER 30, 1996 DATE WILL BE DENIED UNLESS THE APPLICATION CONTAINS SUPPORTING INFORMATION TO JUSTIFY THE CONTINUATION OF THE EXEMPTION.

U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

DOT-E 4039 (EXTENSION)
SECOND REVISION April 23, 1990

In accordance with 49 CFR 107.105 of the Department of Transportation (DOT) Hazardous Materials Regulations DOT-E 4039 is hereby extended for the party(ies) listed below by changing the expiration date in paragraph 10 to September 30, 1994. This change is effective from the issue date of this extension. All other terms of the exemption remain unchanged.

This extension applies only to party(ies) listed below based on the application(s) received in accordance with 49 CFR 107.105. This extension constitutes a necessary part of this exemption and must be attached to it.

Alan I. Roberts
Associate Administrator
for Hazardous Materials Safety

NOV 30 1993
(DATE)

Dist: FHWA

| EXEMPTION HOLDER | APPLICATION DATE |
|---|---|
| Airco Industrial Gases<br>Murray Hill, NJ | October 26, 1993 |

ADVISORY

IF YOU ARE A HOLDER OF AN EXEMPTION THAT AUTHORIZES THE USE OF A PACKAGING WITH A MAXIMUM CAPACITY LESS THAN 450 L (119 GALLONS) OR A MAXIMUM NET MASS LESS THAN 400 KG (882 POUNDS), PLEASE BE ADVISED THAT YOUR EXEMPTION MAY NOT BE RENEWED BEYOND SEPTEMBER 30, 1996. IN ADDITION, NO NEW CONSTRUCTION OF PACKAGINGS WHICH FALL WITHIN THE NON-BULK CAPACITIES LISTED ABOVE ARE AUTHORIZED AFTER SEPTEMBER 30, 1994. THIS IS CONSISTENT WITH THE IMPLEMENTATION OF THE NEW PACKAGING REQUIREMENTS ADOPTED UNDER DOCKET HM-181. ANY APPLICATION SUBMITTED TO THIS OFFICE TO RENEW AN EXEMPTION BEYOND THE SEPTEMBER 30, 1996 DATE WILL BE DENIED UNLESS THE APPLICATION CONTAINS SUPPORTING INFORMATION TO JUSTIFY THE CONTINUATION OF THE EXEMPTION.

# DEPARTMENT OF TRANSPORTATION
## RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
WASHINGTON, D.C. 20590

DOT-E 4039
(FIRST REVISION)

1. AIRCO Industrial Gases, Murray Hill, New Jersey, is hereby granted an exemption from those provisions of this Department's Hazardous Materials Regulations specified in paragraph 5 below to offer packages prescribed herein of a flammable gas for transportation in commerce subject to the limitations and special requirements specified herein. This exemption authorizes shipment of liquefied hydrogen in a non-DOT Specification portable tank and provides no relief from any regulation other than as specifically stated.

2. BASIS. This exemption is based on the application of AIRCO Industrial Gases dated September 28, 1978, submitted in accordance with 49 CFR 107.105 and the public proceeding thereon.

3. HAZARDOUS MATERIALS (Descriptor and class). Liquefied Hydrogen (95 percent parahydrogen, minimum), classed as a flammable gas.

4. PROPER SHIPPING NAME (49 CFR 172.101). Hydrogen, liquefied.

5. REGULATION AFFECTED. 49 CFR 173.316(a).

6. MODE OF TRANSPORTATION AUTHORIZED. Motor vehicle.

7. SAFETY CONTROL MEASURES. Packaging prescribed is a non-DOT specification vacuum insulated portable tank constructed and designed in accordance with Section VIII of the ASME Code having a stainless steel inner tank with a design temperature of - 425°F. and a carbon steel outer jacket. In addition, each tank must comply with the following:

a. Design must comply with the following specifications and related drawings on file with the Office of Hazardous Materials Regulation (OHMR):

| Water Capacity | Design Pressure | Model or Specification |
|---|---|---|
| 150-gal. | 43 psig. | Ryan Drawing C-5290-52 |
| 165-gal. | 43 psig. | Air Reduction Sales Company specification SP-30-5566, and Ryan Drawing C-5290-S1 |
| 273-gal | 125 psig. | Air Reduction Sales Company specification SP-26-8426, Drawing B-OP-2309-1, and Hoffman Laboratories Incorporated Drawings D-63107-1 through D-63107-7 |
| 264-gal. | 150 psig. | Linde Company Model LSH-1000 |

b. Road safety relief valves set at 10 psig or 12 psig are authorized.

c. The maximum permitted filling density is 6.65 percent at a road relief valve setting of 10 psig or 6.60 percent at a setting of 12 psig.

d. Tank is protected by one or more safety relief valves and one or more frangible discs arranged to discharge upward and unobstructed to the outside of the housing. The minimum total relieving capacity of the relief valves and of the frangible discs must be as calculated using the flow formulas contained in CGA Pamphlet S-1.2 with the insulation space saturated with gaseous lading. The safety relief valves must be set to start to discharge at a pressure no higher than 110 percent of tank design pressure. The frangible disc must be designed to function at a pressure between 130 percent and 150 percent of tank design pressure.

8. SPECIAL PROVISIONS.

a. Each portable tank must be plainly marked on both sides near the middle in letters at least two inches high on a contrasting background, "DOT-E 4039" and "One Way Travel Time_____Hours."

b. A copy of this exemption must be carried aboard each motor vehicle used to transport packages covered by this exemption.

c. The drivers assigned to each motor vehicle must have been instructed as to necessary safeguards and proper procedure in the event of unusual delay, fire, or accident. Vehicles when loaded must not be transported through tunnels.

d. To determine the "One-way travel time" (OWTT) a measured holding time must be performed with the tank charged with the intended commodity at a maximum loading temperature to be used in service and to a filling density corresponding to paragraph 7c above. The equilibrium pressure and ambient temperatures must be recorded at 3-hour intervals until the pressure level of the contents reaches a pressure not to exceed that at which the lowest presure relieving device is set to open. This total time lapse in hours shall be noted "measured holding time at ...°F. average temperature." The measured holding time must be adjusted to the equivalent holding time at 85°F. to establish the rated holding time (RHT). The holding time stamped on the jacket namplate (marked rated holding time--MRHT) may be equal to or less than the established RHT. Other equally efficient methods of holding time determined may be used. The "one-way travel time" is determined by the formula:

$$OWTT - \frac{MRHT - 24}{2}; \quad \text{If MRHT is less than 72 hours.}$$

$$OWTT = MRHT - 48; \quad \text{If MRHT is 72 hours or more.}$$

e. The time required between the loading of the tank and the subsequent unloading of the same tank at its final destination must not exceed the OWTT as determined by the applicable formula in paragraph 8d.

f. Before transportation in an empty condition, each portable tank must be emptied of liquid content. In addition, the vapor pressure must be so reduced as to avoid the possibility of venting en route.

g. Each portable tank must be reinspected and retested once every 2 years in accordance with 49 CFR 173.32(e) as prescribed for DOT Specification 51 portable tanks at one and one-half times the design pressure plus 14.7 plus static head.

h. The vehicles used must have an open body with sides at least one foot high, and fitted with a protecting rack in which the shipping containers must be mounted and secured in such a way that they will be held in place even under severe conditions of transportation.

9. REPORTING REQUIREMENTS. Any incident involving loss of contents of the package must be reported to the Office of Hazardous Materials Regulation as soon as practicable.

10. EXPIRATION DATE. November 30, 1980.

Issued at Washington, D.C.:

Douglas A Rabbitt

for Alan I. Roberts
Associate Director for
Hazardous Materials Regulation
Materials Transportation Bureau

12/29/78
[DATE]

Address all inquiries to: Associate Director for Hazardous Materials Regulation, Materials Transportation Bureau, Research and Special Programs Adminisration, U.S. Department of Transportation, Washington, D.C. 20590. Attention: Exemptions Branch.

Dist: B of E, FHWA.