



U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

JAN 23 2009

Mr. Daniel Taylor
Product Engineer
Labconco Corporation
8811 Prospect Avenue
Kansas City, MO 64132-2696

Ref. No. 08-0164

Dear Mr. Taylor:

This responds to your letter regarding the proper classification and exceptions for hazardous materials under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you ask whether a refrigerating machine that contains a small amount of non-flammable, non-toxic refrigerants (Division 2.2 gases R507 and R508B) and pentane (a Class 3 flammable liquid) under pressure is subject to the HMR. You state that the largest refrigerating machine you intend to offer for transportation contains 195 g of R508B, 18.7 g of pentane and 580 mL of non-hazardous refrigeration oil in one of its two stages.

Under § 173.307(a)(4)(i), a refrigerating machine is not subject to the HMR if it contains 12 kg (25 pounds) or less of a Division 2.2 gas. The gas mixture you describe appears to meet the definition of a Division 2.2 gas as defined in § 173.115(b) and, thus, the refrigerating machine is not subject to the HMR provided it contained less than 12 kg (25 pounds) of the gas.

I trust this satisfies your inquiry. Please contact us if we can be of further assistance.

Sincerely,

Hattie L. Mitchell
Chief, Regulatory Review and reinvention
Office of Hazardous Materials Standards



Protecting your
laboratory environment

LABCONCO

LABCONCO CORPORATION
8811 Prospect Avenue
Kansas City, MO 64132-2696

(816) 333-8811 • (800) 821-5525
FAX: (816) 363-0130
www.labconco.com

ex 336

June 4, 2008

Mr. Ed Mazzullo
Director- Office of Standards Development
PHH-10
1201 New Jersey Ave.
Department of Transportation
Washington DC 20590

Stevens
§ 172.101
§ 173.2a
Classification
08-0164

Dear Mr. Mazzullo,

I am asking for a clarification of the proper shipping procedure of a laboratory Freeze Dryer which is a Refrigerating Machine. Labconco wants to ship several different size Freeze Dryers by truck, rail, vessel and by aircraft. These will have cascade refrigeration systems with the high stage charged with a non-flammable non-toxic refrigerant R507. The low stage will be charged with a non-flammable non-toxic refrigerant R508B and a small quantity of Pentane which keeps the oil flowing through the refrigeration system at low operating temperatures. Both stages have refrigeration oil which is a non-regulated liquid that is supplied with the compressors. The Pentane additive is the reason for this question. Without Pentane the Freeze Dryers can ship as Refrigerating Machines, containing non-flammable, non-toxic gases. Hazard Class 2.2, UN Number 2857.

The largest machine will contain 195 gm of R508B and 18.7 gm of Pentane and 580 ml refrigeration oil in the low stage. Throughout the transportation of these machines, R508B will be in the form of a gas, Pentane will be a liquid and the oil will be a liquid. Looking through 49CFR 172.101 Hazard Materials Table, I find nothing that addresses this specific mixture of compounds.

49 CFR 172.101 Hazard Materials Table indicates that these Cascade Freeze Dryers could be shipped under 2 possible shipping names.

Refrigerated Machines, containing flammable, non toxic, liquefied gas. Hazard Class 2.1, UN Number 3358 or

Refrigerating Machines, containing non-flammable, non-toxic gases. Hazard Class 2.2, UN Number 2857

Can Labconco apply 49CFR 173.2a Classification of a Material Having More than One Hazard? The 2 hazards would be Division 2.2 (non-flammable gas) and Class 3 (flammable liquid). According to the Precedence of Hazard Table, the Division 2.2 takes

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precedence so the machines could ship as Refrigerating Machines, containing non-flammable, non-toxic gases. Hazard Class 2.2, UN Number 2857.

49 CFR 173.307 Exceptions for Compressed Gases addresses the pentane in the system.

(a) The following materials are not subject to the requirements of this subchapter.

(4) Refrigerated machines, including dehumidifiers and air conditioners.

(v) 100g (4 ounces) or less of a flammable, non-toxic liquefied gas.

It could be argued that the partial pressure of the liquid Pentane could combine with the gaseous non-flammable R508B and be flammable. This should be no different than if the R508B was not present in the system at all, in which case there would still be the partial pressure gas of Pentane by itself in the system plumbing. In either case 49CFR 173.307 addresses the very small quantity of Pentane, which will be in the refrigeration system and exempts it from shipping requirements.

If this reasoning is incorrect, please define how these machines must ship and define what, if any, tests must be performed to qualify these products for transportation.

Sincerely,



Lowell Kuhn
Sr. Product Engineer

Attachments

MSDS R507

MSDS R508B

MSDS Pentane

MSDS Emkarate RL 22H Refrigeration Oil

Phase Diagram Pentane