



U.S. Department of Transportation
**Pipeline and Hazardous Materials
Safety Administration**

1200 New Jersey Ave, SE
Washington, D.C. 20590

OCT 21 2009

Mr. Gene Sanders, DGSA
Senior Dangerous Goods Transportation Specialist
Thermo Fisher Scientific, Customer channel Group
2000 Park Lane
Pittsburg, Pennsylvania 15275

Ref. No. 09-0037

Dear Mr. Sanders:

This responds to your e-mail regarding the classification of hydrogen gas at low pressure under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you ask whether the HMR apply to the transportation of a small quantity of hydrogen inside a glass tube or sphere if the hydrogen is shipped at a reduced pressure, rather than compressed.

According to the information provided with your email, the hydrogen gas is shipped within a glass tube with a total capacity of 1.7 ml. The gas is shipped at a pressure lower than atmospheric pressure (75 torr). In the event that the glass tube or sphere were to break, the amount of hydrogen released (0.17 ml) would be insufficient to ignite (i.e., in a 1-inch diameter tube or sphere, the concentration of the hydrogen would be below the 4% LEL).

It is the opinion of this office that when packaged as described in your e-mail, the hydrogen is not shipped in a quantity and form that poses an unreasonable risk to health and safety or property and, therefore, is not subject to regulation under the HMR.

I hope this satisfies your inquiry. If we can be of further assistance, please contact us.

Sincerely,

Charles E. Betts
Chief, Standards Development
Office of Hazardous Materials Standards

Engrum
3172.101

Applicability
09-0037

Drakeford, Carolyn <PHMSA>

From: Gorsky, Susan <PHMSA>
Sent: Wednesday, February 18, 2009 7:20 AM
To: Drakeford, Carolyn <PHMSA>
Subject: FW: Spectrum tubes with Hydrogen

From: Sanders, Gene [mailto:gene.sanders@thermofisher.com]
Sent: Tuesday, February 17, 2009 4:41 PM
To: Gorsky, Susan <PHMSA>
Cc: Mayfield, John
Subject: Spectrum tubes with Hydrogen

Dear Ms. Gorsky,

Thermo Fisher has a product that includes 1.7 mL of hydrogen gas at low pressure, 75 Torr, approximately 1/10 of an atmosphere, inside a glass tube. In the event that the glass tube were to be broken, the hydrogen would return to atmospheric pressure, and its volume would become 0.17 mL, approximately one half of 1% of an ounce. As the hydrogen diffuses into air in a sphere 1 inch across, it becomes too dilute to ignite, (i.e., in a 1 inch diameter sphere, the concentration of that much hydrogen would be below the 4% LEL).

Because of the extremely small quantity of hydrogen in this article, and because it is shipped at a reduced pressure rather than compressed, we do not believe that it poses an unreasonable risk to health, safety, or property when shipped in commerce, and therefore is not a hazardous material for transport. Does PHMSA disagree with this classification?

Thank you.

Cheers,

Gene Sanders, DGSA
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