



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

1200 New Jersey Ave, S.E.  
Washington, D.C. 20590

JUL 01 2013

Mr. Guy Dalton  
Head of Transport Compliance/Safety  
Linde Gas North America LLC  
130 Briar Hill  
Painesville, OH 44077

Ref. No.: 13-0092

Dear Mr. Dalton

This is in response to your April 23, 2013 letter requesting clarification of the requirements for filling DOT 3A and 3AA specification cylinders under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically you asked if “Deuterium, compressed, UN1957” may be considered as the same as “Hydrogen, compressed, UN1049” for the purposes of determining the requalification period in accordance with § 180.209 or the eligibility to fill cylinders to 110% of the marked service pressure.

DOT 3A or 3AA cylinders with a water capacity of 56.7 kg (125 lbs) or less used exclusively for the gas service specified in § 180.209(b)(1) may be requalified every ten years instead of every five years provided certain requirements are met. While § 180.209(b)(1) specifies hydrogen as a permitted gas service, deuterium is not specified. Therefore cylinders used for deuterium must be requalified every five years.

In your letter, you stated that your company is a party to Special Permit 6530, which allows the filling of 3A, 3AA, 3AX and 3AAX cylinders with hydrogen and mixtures of hydrogen with helium or nitrogen to 110 % of the cylinder’s marked service pressure. The special permit authorizes the transport of hydrogen and mixtures of hydrogen. Deuterium and mixtures of deuterium are not authorized by the special permit.

I hope this information is helpful. If you have further questions, please do not hesitate to contact this office.

Sincerely,

Delmer Billings  
Senior Regulatory Advisor  
Standards and Rulemaking Division

April 23, 2013

130 Briar Hill  
Painesville, Ohio 44077  
440-354-5614  
440-579-0203  
guy.dalton@linde.com

Office of Hazardous Materials Standards  
Pipeline and Hazardous Materials Safety Administration, Attn: PHH-10  
U.S. Department of Transportation, East Building  
1200 New Jersey Avenue, SE.  
Washington, DC 20590-0001.

Learly  
§ 180.209  
§ 173.301  
Cylinders  
13-0092

Request for Interpretation

Dear Sir or Madame,

Linde Gas North America LLC (Linde) is requesting interpretation and guidance regarding the use DOT 3A and 3AA for the transport of Deuterium.

**Background**

Deuterium is an isotope of Hydrogen and is filled into 3A and 3AA cylinders with less than 125lb water capacity as permitted by 49CFR173.301

49CFR180.209(b)(1) permits the requalification of such cylinders for a period of ten years if the requirements of 180.209(b)(1)(ii) are met. This subparagraph allows the filling of hydrogen into such cylinders tested at ten year intervals.

DOT-SP6530, to which Linde Gas North America LLC holds party status allows filling of 3A, 3AA, and 3AAX cylinders to 110% of the cylinder's rated service pressure and excepts the need to comply with 173.302a(b) if all provisions of the Special Permit are met..

**Question 1**

Is Deuterium, an isotope of Hydrogen, to be considered as hydrogen for purposes of determining allowed retest intervals of 3A and 3AA cylinders as authorized in 180.209(b)(1)(ii).

**Question 2**

For filling of 3A, 3AA and 3AAX cylinders at pressures of 110% of the cylinder rated service pressure as allowed by DOT-SP5630, is Deuterium to be considered as Hydrogen. Can deuterium be filled to 110% of rated service pressure into the mentioned cylinders?

A written response at your earliest convenience is appreciated.

Sincerely

A handwritten signature in black ink that reads "Guy Dalton". The signature is written in a cursive style with a large, prominent "G" and "D".

Guy Dalton  
Head of Transport Compliance/Safety  
Linde Gas North America LLC  
440-251-0303  
guy.dalton@linde.com