



U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

JAN 27 2010

Mr. Ralph Diaz
Air Liquide America
Specialty Gases LLC
2700 Post Oak Blvd.
Houston, TX 77056

Ref. No. 09-0265

Dear Mr. Diaz:

This responds to your e-mail regarding the reuse of a cylinder under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you ask under what condition the HMR authorize a cylinder previously used in carbon monoxide (CO) service to be refilled with a high-purity gas such as helium, argon, or hydrogen. Additionally, you ask whether the HMR define the term “dry,” as used in § 173.302a(c).

When promulgating regulations regarding the filling and transportation of cylinders used exclusively in CO service, we did not foresee the need to codify any condition or minimum qualification for the continued use of such cylinders in another gas service. Although the HMR do not prohibit such practice, PHMSA strongly discourages it for safety reasons. For example, the moisture in CO may cause internal micro-cracking of the cylinder. Such cracking may not be detected through internal visual inspection or hydrostatic testing. Therefore, until a regulatory solution is adopted, we recommend the following tests be performed, at a minimum, if considering a change in gas service:

1. Proof pressure test equal to test pressure of the cylinder with a minimum of one (1) minute hold time; and
2. 100% side wall ultrasonic examination (UE) using shear wave with accept/reject criteria of 5% of design minimum wall thickness.

Ten percent overfill of the cylinders is not recommended. The term “dry,” as used in § 173.302a(c), is not defined in the HMR. For the purposes of § 173.302a(c), “dry” means a

gas having a dew point at or below -46.7 °C (-52 °F) at 101.3 kPa (14.7 psia) (one atmosphere).

Thank you for bringing this matter to our attention. If we can be of further assistance, please contact this office.

Sincerely,

A handwritten signature in black ink, appearing to read 'H. Mitchell', written in a cursive style.

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

Drakeford, Carolyn (PHMSA)

From: Mitchell, Hattie (PHMSA)
Sent: Thursday, November 12, 2009 11:58 AM
To: Drakeford, Carolyn (PHMSA)
Subject: FW: 49CFR173.302a(c)

Stevens
§ 173.302a (c)
Cylinders
09-0265

From: Diaz, Ralph [mailto:Ralph.Diaz@Airliquide.com]
Sent: Thursday, November 12, 2009 11:01 AM
To: Toughiry, Mark (PHMSA); Mitchell, Hattie (PHMSA); Cassidy, Duane (PHMSA); Chaney, Wayne (PHMSA)
Subject: 49CFR173.302a(c)

Not sure of proper DOT dept. to answer the following:

49CFR173.302a(c) limits the pressure (to 5/6 service pressure) of cylinders filled with **dry** carbon monoxide and also limits the pressure further (to only 1000 psi) of cylinders of 'wet' carbon monoxide.

Questions:

What is DOT's intent on the disposition and continued use of these cylinders when LATER filled with other clean high purity gases like helium, argon, hydrogen, etc? Can the same cylinders be filled to full service pressure with these 'clean gases', filled to 10% overfill, etc. provided hydrotest is acceptable for these filling operations? Was it the intent of DOT to limit the filling pressure of all gases once exposed to carbon monoxide?

Did DOT ever define 'dry'?

Regards,
Ralph Diaz