U.S. Department
of Transportation

Pipeline and Hazardous Materials Safety Administration

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

AUG 2 1 2014

Mr. Steve M. Reed
President
ARC Process, Inc.
3921 Steck Avenue, Suite A-120
Austin, Texas 78759

Ref. No. 14-0039

Dear Mr. Reed:

This responds to your initial March 5, 2014 email request, your April 17, 2014 email request, and follow-up telephone conversation and email correspondence with a member of our staff seeking clarification on the non-bulk packaging requirements for pyrophoric materials and the manufacturing of DOT Specification 4B cylinders with bolted tops under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you ask about authorized inner packaging for transporting high purity metal organic materials used in the chemical and semi-conductor industries. These high purity metal organic materials are classified as a hazardous material and described as "UN 3394, Organometallic substance, liquid, pyrophoric, water-reactive, 4.2 (4.3), PG I." Your questions are paraphrased and answered below.

Q1. For liquid pyrophoric materials, do the HMR prohibit openings on inner packagings from exceeding one inch diameter?

A1. The answer to your question is yes. The final rule HM-215L [78 FR 987], issued January 7, 2013, removed subparagraphs (1), (2), and (3) from § 173.181(c) which sets forth the non-bulk packaging requirements for pyrophoric materials (liquid). Prior to publication of HM-215L, § 173.181(c)(1) stated "inner packagings must have no opening exceeding 25 mm (1 inch) diameter." We intended to only revise the introductory paragraph (c), with paragraphs (1), (2), and (3) of § 173.181(c) remaining unchanged. However, an incorrect amendatory instruction led to the deletion of paragraphs (c)(1) through (3). The deleted text will be reinstated in a future rulemaking. It is our intent that individuals packaging and offering these materials continue to offer shipments of liquid pyrophoric materials in compliance with the requirements of § 173.181 (c)(1) through (3) effective prior to publication of HM-215L.

Q2. Do the HMR authorize the modification of 4B cylinders by drilling holes in the cylinder tops to receive valve protection rings instead of welding valve protection rings to the cylinder tops?

A2. The answer to your question is no. Section 178.50 provides the specifications for 4B welded and brazed steel cylinders. Paragraph (e) of this section states that only the attachment of neckrings, footrings, handles, bosses, pads, and valve protection rings to the tops and bottoms of cylinders by welding or brazing is authorized.

Q3. How would one apply for a special permit to manufacture modified 4B steel cylinders that are not in compliance with § 178.50?

A3. Instructions for applying for a special permit are located in 49 CFR, Part 107, Subpart B, Special Permits, § 107.105. For further questions about special permitting, contact the Pipeline and Hazardous Materials Safety Administration, Office of Hazardous Materials Safety, Approvals and Permits Divisions at 202-366-4535.

I hope this answers your inquiry. If you need additional assistance, please contact this office at (202) 366-8553.

Sincerely,

Robert Benedict
Chief, Standards Development Branch
Standards and Rulemaking Division

Boothe
§173.181

Drakeford, Carolyn (PHMSA)

Cylinders
14-0039

From: Betts, Charles (PHMSA)
Sent: Wednesday, March 05, 2014 1:12 PM
To: Drakeford, Carolyn (PHMSA)
Subject: FW: 4B Cylinders RFI
Attachments: Scan.pdf

Carolyn-

Please log and assign for response.

From: Steve M. Reed [mailto:stever@arcprocess.com]
Sent: Wednesday, March 05, 2014 12:57 PM
To: Betts, Charles (PHMSA)
Cc: 'Mark Reed'; Cassidy, Duane (PHMSA); Paquet, Ryan (PHMSA)
Subject: FW: 4B Cylinders RFI

Dear Mr. Betts:

ARC Process, Inc. is a manufacturer of 4-B Bubbler canisters for the chemical and semiconductor industries in Austin, Texas. When referencing the Hazardous Materials Table, 172.101, under 'Orgometallic Substance, Liquid, Pyroforic, Water-Reactive, Class 4.2 (4.3), PG I' (the classification for our customer's products) the non-bulk packaging instruction is **173.181**.

Our customers basically use two types of packages for their High Purity Metal Organics (HPMO) products, ***DOT Specification Cylinders*** and '***inner metal cans***' which are the inner package of a combination package (non-DOT spec). **In the past the 173.181 (c) had a statement for no openings to exceed 1" but this has been removed**. I do not see this 1" opening limitation for 173.181 (a) regarding DOT Specification Cylinders, or in 178.35 or 178.50.

§173.181 Pyrophoric materials (liquids).

(a) Specification steel or nickel cylinders prescribed for any compressed gas except acetylene having a minimum design pressure of 1206 kPa (175 psig). Cylinders with valves must be:

(1) Equipped with steel valve protection caps or collars, unless overpacked; or

(2) Overpacked in a wooden box (4C1, 4C2, 4D or 4F); fiberboard box (4G), or plastic box (4H1 or 4H2). Cylinders must be secured to prevent shifting in the box and, when offered for transportation or transported, must be so loaded that pressure relief devices remain in the vapor space of the cylinder. (See §177.838(h) of this subchapter.)

(b) Steel boxes (4A), aluminum boxes (4B), metal boxes, other than steel or aluminum (4N), wooden boxes (4C1, 4C2, 4D, or 4F) or fiberboard boxes (4G); steel drums (1A1 or 1A2), aluminum drums (1B1 or 1B2), metal drums, other than steel or aluminum (1N1 or 1N2), plywood drums (1D), or fiber drums (1G); or steel jerricans (3A1 or 3A2) or aluminum jerricans (3B1 or 3B2) enclosing not more than four strong, tight metal cans with inner receptacles of glass or metal, not over 1 L (0.3 gallon) capacity each, having positive screwcap closures adequately gasketed. Inner packagings must be cushioned on all sides with dry, absorbent, incombustible material in a quantity sufficient to absorb the entire contents. The strong, tight metal cans must be closed by positive means, not by friction.

(c) Steel drums (1A1 or 1A2), aluminum drums (1B1 or 1B2), metal drums, other than steel or aluminum(1N1 or 1N2) or fiber drums (1G); steel jerricans (3A1 or 3A2) or aluminum jerricans (3B1 or 3B2); or steel boxes (4A), aluminum boxes (4B) or metal boxes, other than steel or aluminum (4N) not exceeding 220 L (58 gallons) capacity each with strong, tight inner metal cans not over 4.0 L (1 gallon) capacity each. The strong, tight metal cans must be closed by positive means, not friction.

[Amdt. 173-224, 55 FR 52643, Dec. 21, 1990, as amended at 56 FR 66270, Dec. 20, 1991; 65 FR 58629, Sept. 29, 2000; 66 FR 45183, 45380, Aug. 28, 2001; 68 FR 24660, May 8, 2003; 68 FR 61941, Oct. 30, 2003; 78 FR 1087, Jan. 7, 2013]

Please see attached, older regulation showing a max opening size of 25mm for the 'inner metal can'.

We would appreciate your comments and/or ruling on whether we can now manufacture 4B cylinders with bolted tops, in addition to welded cylinders, for the above applications. Your consideration and help would be greatly appreciated.

Yours truly,

Steve M. Reed
President
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"Laissez les bons temp rouler"