U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

MAR 3 0 2018

David Diamond
CEO
Precision Fabricators Ltd.
171 Tosca Drive
Stoughton, MA 02072

Reference No. 17-0137

Dear Mr. Diamond:

This letter is in response to your November 30, 2017, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to cylinders. Specifically, you ask whether a U.S. Department of Transportation (DOT) specification 4B cylinder may be used to transport 500 cubic centimeters (0.5 liter) of anhydrous ammonia mixture, of which half the cylinder will have anhydrous ammonia (liquid form) while the other half will have ammonia gas (vapor form).

DOT 4B cylinders are not authorized for anhydrous ammonia. The Column 8B entry for "UN1005, Anhydrous, ammonia" under the Hazardous Materials Table (HMT; § 172.101) requires this material to be placed in a non-bulk cylinder prescribed in § 173.304. DOT 4B cylinders are not included in the list of DOT cylinders authorized for use with anhydrous ammonia in § 173.304a(a)(2). Furthermore, the Column 8A entry under the HMT specifies there are no packaging exceptions for UN1005.

I hope this information is helpful. Please contact us if we can be of further assistance.

Sincerely,

T. Glenn Foster

T. Glenn Foster
Chief, Regulatory Review and Reinvention Branch
Standards and Rulemaking Division

Lehman
173.301
Cylinders
17-0137

January, Ikeya CTR (PHMSA)

From: INFOCNTR (PHMSA)
Sent: Friday, December 15, 2017 2:09 PM
To: Hazmat Interps
Subject: FW: Request for interpretation

Importance: High

Hello All,

Please see the below interp request.

Thanks!

-Breanna

From: David B. Diamond [mailto:DDiamond@precision-fab.com]
Sent: Thursday, November 30, 2017 5:37 PM
To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>
Subject: Request for interpretation
Importance: High

Dear PHMSA,

We are manufacturer M1114 making 316L stainless steel DOT4B cylinders and we have a customer seeking a cylinder to transport ½ Liter (500cc) of anhydrous ammonia. However, only half of the cylinder will have anhydrous ammonia (in liquid form) – the other half will have ammonia gas (ammonia in vapor phase). Maximum pressure will be 125psi. Due to the anticipated volume, this link (https://www.fmcsa.dot.gov/faq/anhydrous-ammonia-covered-under-hazardous-materials-safety-permit-program) suggests that this is not subject to the Hazardous Materials Safety Permit Program.

We would like to determine if we may use a DOT4B300 cylinder for this application – we propose to fabricate a 4B 500cc vessel with inlet and outlet ports both employing diaphragm valves. The cylinder will be pressure tested, helium leak tested (under vacuum to 1x10-9 atm-cc/sec) and hydrostatic expansion tested as per 4B requirements. CFR 49 Section 173.301 specifically permits DOT4B vessels – see below:

§ 173.301 General requirements for shipment of compressed gases and other hazardous materials in cylinders, UN pressure receptacles and spherical pressure vessels.

(a)*General qualifications for use of cylinders.* Unless otherwise stated, as used in this section, the term "cylinder" includes a UN pressure receptacle. As used in this subpart, filled or charged means an introduction or presence of a hazardous material in a cylinder. A cylinder filled with a Class 2 hazardous material (gas) and offered for transportation must meet the requirements in this section and §§ 173.301a through 173.305, as applicable.

(1) Compressed gases must be in UN pressure receptacles built in accordance with the UN standards or in metal cylinders and containers built in accordance with the DOT and ICC specifications and part 178 of this subchapter in effect at the time of manufacture or CRC, BTC, CTC or TC specification, and requalified and marked as prescribed in subpart C in part 180 of this subchapter, if applicable. The DOT, ICC, CRC, BTC, CTC and TC specifications authorized for use are as follows:

A table follows in CFR 49 173.301 which allows 4B cylinders.

173.301 (pasted above - if interpreted in this fashion, a 500cc 4B cylinder would be allowed)
173.304a does not cite 4B cylinders for use with anhydrous ammonia (if interpreted directly, a 4B cylinder would not be allowed)
173.306 makes an allowance for refillable containers below .95L in volume (if interpreted in this fashion, a 500cc 4B cylinder would be allowed)
173.313 permits a UN pressure vessel (if interpreted in this fashion, a 500cc 4B cylinder would be allowed)
173.276 permits a heat treated vessel for anhydrous ammonia (if interpreted in this fashion, a heat treated 500cc 4B cylinder would be allowed)

Precision Fabricators
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Please welcome PFL's new Office Manager, Marisa Arai; marai@precisionfab.net, ext 201
Please welcome PFL's new Operations Leader, Shaun White; swhite@precisionfab.net, ext 234

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