



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

JUL 28 2017

Christopher R. Adams
Manager, Regulatory Affairs
FIBA Technologies, Inc.
53 Ayer Road
Littleton, MA 01406

Reference No. 17-0059

Dear Mr. Adams:

This letter is in response to your May 30, 2017, email and subsequent phone conversations requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR parts 171-180) applicable to Multi-Element Gas Containers (MEGCs). Specifically, you ask whether Department of Transportation (DOT) cylinders can be transported in MEGCs for both domestic and international transportation under certain conditions.

We have paraphrased and answered your questions as follows:

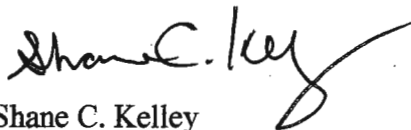
- Q1. You ask whether a grouping of seamless DOT specification cylinders (longer than 2 meters) within a frame can also meet the definition of a MEGC for domestic transportation.
- A1. The answer is no. In accordance with the definition in § 171.8, a "Multiple-element gas container or MEGC" is defined in the HMR as "assemblies of UN cylinders, tubes, or bundles of cylinders interconnected by a manifold and assembled within a framework." The requirements for the use of MEGCs in § 173.312 specify that certain requirements for UN cylinders in part 173 must be followed. Section 173.312 also requires that MEGCs meet the design, construction, inspection, and testing requirements in § 178.75 and be marked in accordance with § 178.75(j). Therefore, for purposes of the HMR, DOT specification cylinders connected by a manifold and assembled within a framework are not considered MEGCs. However, bundles of DOT specification cylinders may be mounted on frames in accordance with the requirements of § 173.301(i)."
- Q2. You ask whether DOT 3T and 3AAX cylinders mounted in frames which conform to the design requirements for a MEGC (other than those specific to cylinders meeting certain UN/ISO standards) can be transported in accordance with § 173.301(i), provided the requirements for both sections are met.
- A2. The answer is yes, provided the frame is not visibly marked in accordance with the MEGC marking requirements in § 178.75(j) during transportation. The markings specified in § 178.75(j) certify that the MEGC meets the design and approval

requirements in part 178. Therefore, MEGCs which display the marking in accordance with § 178.75(j) are only authorized for transportation with UN/ISO cylinders. See A1.

- Q3. You ask for confirmation of your understanding that DOT permits bundles of DOT cylinders to be transported in accordance with international standards as authorized in part 171 subpart C. You note that the United Nations (UN) Recommendations on the Transport of Dangerous Goods do not specify the cylinder design type required for a bundle of cylinders or MEGCs. Rather, cylinders must be of a type "approved by the Competent Authority."
- A3. Hazardous materials may be transported to, from, or through the United States under the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO TI), the International Maritime Dangerous Goods (IMDG) Code, Transport Canada's Dangerous Goods (TDG) Regulations, or the International Atomic Energy Agency (IAEA) Regulations when the requirements of part 171 subpart C are met. The United Nations Recommendations on the Transport of Dangerous Goods recognize the transport and use of pressure receptacles other than those that bear the "UN" certification mark when approved by the Competent Authority of the countries of transport and use (see §107.1 definition of Competent Authority). This recognition is reflected also in the IMDG Code and the European ADR under certain conditions. Therefore, bundles of DOT cylinders are authorized for transportation in accordance with the requirements in 49 CFR 173.301(i) and applicable international standards.

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

Sincerely,



Shane C. Kelley
Acting Director, Standards and Rulemaking Division

Goodall, Shante CTR (PHMSA)

Rehman
171.8
Definitions
17-0059

From: INFOCNTR (PHMSA)
Sent: Wednesday, May 31, 2017 11:00 AM
To: Hazmat Interps
Subject: FW: FIBA Technologies, Inc. Urgent Request for Letter of Interpretation Regarding 49 CFR 171.8 - Definition of a MEGC
Attachments: FIBA Request for Letter of Interpretation Regarding 49 CFR 171.8 - Definition of a MEGC - PDF.pdf

Hi Shante/Alice,

Please submit this as a letter of interpretation. Mr. Adams' contact information is contained in the attachment.

Please let me know if you have any questions.

Thanks,
Jordan

From: Chris Adams [mailto:ChrisAdams@fibatech.com]
Sent: Tuesday, May 30, 2017 3:41 PM
To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>
Cc: Cassidy, Duane (PHMSA) <Duane.Cassidy@dot.gov>; Benninghoven, Neil (PHMSA) <james.benninghoven@dot.gov>
Subject: FIBA Technologies, Inc. Urgent Request for Letter of Interpretation Regarding 49 CFR 171.8 - Definition of a MEGC

To Whom It May Concern:

Attached is an urgent request from FIBA for a letter of interpretation regarding the definition of a MEGC. We ask that the DOT review this letter as soon as possible because a response is critical to our business planning, inspections by DAA, and timely deliveries to our customers, who are major industrial gas suppliers both in the USA and overseas.

Thank you in advance for your timely assistance with this request.

Very truly yours,

Christopher R. Adams
Manager, Regulatory Affairs
FIBA Technologies, Inc.



FIBA TECHNOLOGIES, INC.
53 Ayer Road
Littleton, MA 01406 USA
TEL (508) 887-7100
<http://www.fibatech.com>

May 30, 2017

E-Mail

ATTN: Hazardous Materials Information Center

infocntr@dot.gov

SUBJECT: Letter of Interpretation

REF: 49 CFR § 171.8

To Whom It May Concern:

In accordance with 49 CFR § 105.20(2), I am writing to you seeking guidance regarding the above referenced citation from Title 49 of the Code of Federal Regulations. 49 CFR § 171.8 provides a definition of a multiple-element gas container or MEGC. For the reasons explained in the following paragraphs, we believe that, despite the interpretation found in DOT reference number 07-0119, this definition of a MEGC is incomplete and should include DOT 3T and 3AAX specification cylinders.

Reason # 1 –

UN model regulations state in Part 6, REQUIREMENTS FOR THE CONSTRUCTION AND TESTING OF PACKAGINGS, INTERMEDIATE BULK CONTAINERS (IBCs), LARGE PACKAGINGS, PORTABLE TANKS, MULTIPLE-ELEMENT GAS CONTAINERS (MEGCs) AND BULK CONTAINERS, paragraph 6.2.3.1:

6.2.3 Requirements for non-UN pressure receptacles

6.2.3.1 Pressure receptacles not designed, constructed, inspected, tested and approved according to the requirements of 6.2.2 shall be designed, constructed, inspected, tested and approved in accordance with the provisions of a technical code recognised by the competent authority and the general requirements of 6.2.1.



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FIBA Technologies, Inc.
Request for Letter of Interpretation Regarding 49 CFR 171.8 – Definition of a MEGC

Likewise, ADR regulations applicable as from 1 January 2017 state the following:

- 6.2.3 **General requirements for non-UN pressure receptacles**
- 6.2.3.1 ***Design and construction***
- 6.2.3.1.1 Pressure receptacles and their closures not designed, constructed, inspected, tested and approved according to the requirements of 6.2.2 shall be designed, constructed, inspected, tested and approved in accordance with the general requirements of 6.2.1 as supplemented or modified by the requirements of this section and those of 6.2.4 or 6.2.5.

Given these UN and ADR statements, FIBA contends that 3T and 3AAX cylinders (a.k.a. tubes) are pressure receptacles designed, constructed, inspected, tested and approved in accordance with the provisions of Title 49 of the CFR, which is a technical code recognized by the U.S.A. competent authority, DOT, and this technical code (specifically 49 CFR §§ 178.37 and 178.45) complies fully with the General requirements for seamless pressure receptacles as described in paragraph 6.2.1 of the UN model regulations.

One could argue that a European MEGC manufacturer or gas producer would export a MEGC manufactured with DOT 3T or 3AAX tubes to the USA with the expectation that they would have unrestricted travel and operations within the USA because the tubes are manufactured to a DOT code whereas the American manufacturer or gas supplier wishing to ship the same container within the USA would be told by the DOT that the MEGC was not authorized due to the specification tubes/cylinders.

Reason # 2 –

UN definition for a tube follows:

Tube means a seamless transportable pressure receptacle of a water capacity exceeding 150 litres but not more than 3 000 litres;

ADR regulations applicable as from 1 January 2017 provide the following definition for a tube:

"Tube" (Class 2) means a transportable pressure receptacle of seamless or composite construction having a water capacity exceeding 150 litres and of not more than 3 000 litres;

The DOT amended the definition in 49 CFR § 171.8 to a *UN tube*, rather than just a tube. The DOT also added that the tube “has been marked and certified as conforming to the requirements in part 178”. The above text from the UN model regulations is repeated in the DOT definition. FIBA contends that DOT 3T and 3AAX tubes meet the DOT, UN and ADR definitions for a tube. FIBA is confident that it was not the intent of UN and ADR members to exclude 3T and 3AAX tubes from the definition and the MEGC.



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Request for Letter of Interpretation Regarding 49 CFR 171.8 – Definition of a MEGC

Reason # 3 –

Other than the “elements” being DOT 3T or 3AAX tubes rather than ISO 11120 tubes, a MEGC manufactured with these DOT specification tubes complies with the requirements for the elements of a MEGC as outlined in section 6.7.5.2.3, which follows:

6.7.5.2.3 Elements of an MEGC shall be made of seamless steel and be constructed and tested according to Chapter 6.2. All of the elements in an MEGC shall be of the same design type.

A MEGC built with DOT 3T or 3AAX tubes complies with all of the requirements of the subsections of 6.7.5, which is *Requirements for the design, construction, inspection and testing of multiple-element gas containers (MEGCs) intended for the transport of non-refrigerated gases*. Without going into all the details, the requirements of 49 CFR § 178.75 are the same as those of the UN model regulations in 6.7.5 with the glaring exception being that 49 CFR § 178.75(d)(3) stipulates that the pressure receptacle of a MEGC must conform to a listed ISO standard (including ISO cylinders) and, by DOT interpretation, cannot include a 3T or 3AAX tube.

Reason # 4 –

IMDG code makes no distinction between a UN multiple-element gas container and a MEGC. In the provisions for MEGC, section 6.7.5.2.3 states: “Elements of an MEGC shall be made of seamless steel and be constructed and tested according to chapter 6.2. All of the elements in an MEGC shall be of the same design type.” A FIBA MEGC manufactured with DOT 3T or 3AAX tubes meets this criterion.

IMDG code also provides section 6.2.3, *Provisions for non-UN pressure receptacles*, wherein the following statements are made:

6.2.3.1 – “Pressure receptacles not designed, constructed, inspected, tested and approved according to 6.2.2 shall be designed, constructed, inspected, tested and approved in accordance with a technical code recognized by the competent authority and the general provision of 6.2.1.”

6.2.3.2 – “Pressure receptacles designed, constructed, inspected, tested and approved under the provisions of this section [6.2.3] shall not be marked with the UN packaging symbol.”

6.2.3.4 – “Marking shall be in accordance with the requirements of the competent authority of the country of use.”



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Request for Letter of Interpretation Regarding 49 CFR 171.8 – Definition of a MEGC

FIBA contends that these provisions of the IMDG code are written specifically to take into account the fleets of MEGC that are in service and manufactured with DOT-authorized, 3T and 3AAX tubes and to allow such MEGC to continue in service in perpetuity.

Reason # 5 –

As required by ADR in sections 4.1.6.1 and 4.1.6.3, pressure receptacles for goods of Class 2 and goods of other classes assigned to packing instruction P200 “shall be constructed and closed so as to prevent any loss of contents which might be caused under normal conditions of carriage ...” and “to contain a gas or a mixture of gases according to the requirements [of ADR regulations] ...” This “applies to pressure receptacles which are elements of MEGCs and battery-vehicles.”

FIBA contends that the 3T and 3AAX tubes of 49 CFR comply with these ADR requirements.

Given the above information, we ask the DOT to respond to the following question:

Q. Can the DOT include assemblies of Specification 3T and 3AAX cylinders interconnected by a manifold and assembled within a framework in its definition of a MEGC?

A. Proposed answer: “YES”.

Thank you in advance for your attention to this matter. We hope that you can treat this very urgently and respond in a much shorter time period than the standard turnaround time. We have several customers and vendors being impacted by this interpretation. We think that, whether they know it or not, the entire industry of persons manufacturing, inspecting, testing and certifying MEGC should be concerned about this issue. Please do not hesitate to contact me if you have any questions or need any additional information.

Sincerely yours,

Christopher R. Adams
Manager, Regulatory Affairs
FIBA Technologies, Inc.

From: Chris Adams
To: Lehman, Victoria (PHMSA)
Subject: RE: Background materials on DOT Tube Trailer and MEGC requirements
Date: Wednesday, June 14, 2017 1:55:44 PM
Attachments: M299e.pdf

Ms. Lehman:

Thank you for calling me to discuss this matter. I will look over everything carefully. I hope you appreciated the problem we're having with our DAA. I'd like to give you something to think about as you continue preparing your response.

FIBA believes that there seems to be an oversight in the CFR by not clearly allowing use of non-UN tubes (DOT 3-series tubes) in DOT MEGCs. As pointed out in my letter seeking a DOT interpretation, the UN Model Regulations, ADR and IMDG allow use of non-UN tubes with MEGCs. Please note that under 49 CFR 171.25(a), *Additional requirements for the use of the IMDG Code*, it is stated that shipments of hazardous materials in accordance with the IMDG code must conform to the requirements in 171.25 provided they conform to the requirements of 49 CFR 171.22, as applicable. Use of the specification requirements in Part 178, as mentioned in § 171.22(g)(5) and 173.24(c)(1), and the requirement that a MEGC use UN tubes is not applicable to an IMDG MEGC with non-UN tubes (3-series tubes). Therefore, we believe that independent third parties, such as ABS, can still certify our IMDG MEGCs with 3-series tubes. We argue the requirement to use a UN tube in a MEGC is not applicable since the package we manufacture and seek to certify is an IMDG MEGC with non-UN tubes, which is permitted in IMDG code and 49 CFR 171.25(a).

As pointed out in Final Rule HM-220E: "The HMR authorize domestic transportation of hazardous materials shipments prepared in accordance with the IMDG Code if all or part of the transportation is by vessel, subject to certain conditions and limitations..." This rule also stated:

"Our goal is to harmonize without sacrificing the current HMR level of safety and without imposing undue burdens on the regulated public."

"Our proposal does not remove existing requirements for DOT specification cylinders; rather, we propose to incorporate the UN standards so that a shipper may use either a DOT specification cylinder or a UN standard pressure receptacle as appropriate for individual gases and circumstances."

As pointed out in HM-218E: "Seamless DOT specification cylinders longer than 2 meters (6.5 feet) may be transported only when horizontally mounted on a vehicle or in an ISO framework or other framework of equivalent structural integrity." I can tell you that, prior to the world and DOT formulating and adopting the idea of a MEGC, DOT 3T or 3AAX cylinders (a.k.a. tubes) were regularly transported in an ISO framework throughout the globe and these were then and are today the equivalent of a MEGC, excepting only that the tubes are DOT Specification cylinders, rather than UN ISO 11120 tubes.

I do have a couple of questions:

1. If you determine that the definition of a MEGC cannot be altered in a letter of interpretation to include DOT 3T and 3AAX cylinders, can you provide clear language that can be shown to a DAA that, per 173.301(i), DOT 3T and 3AAX cylinders mounted in frames and conforming to the requirements specified in the paragraph can be approved by DOT for both domestic and international shipment (or, alternatively, approved for road, rail and vessel transport) similarly to a MEGC?
2. Do you think that there's any way for the DOT to interpret that a grouping of seamless DOT specification cylinders (longer than 2 m) within a frame can be acknowledged by DOT interpretation to be a bundle of cylinders comprising a MEGC?

Finally, it is our contention that Multilateral Agreement M299 also shows that ADR allows transit of IMDG skids with DOT specification cylinders by its reference to refillable pressure receptacles approved by the US Department of Transportation. I've attached a copy of this agreement.

Sincerely,

Chris Adams
FIBA

From: Lehman, Victoria (PHMSA) [mailto:victoria.lehman@dot.gov]
Sent: Wednesday, June 14, 2017 11:29 AM
To: Chris Adams
Subject: Background materials on DOT Tube Trailer and MEGC requirements

Dear Mr. Adams,

As discussed, you may be interested in the following references:

Rulemakings

Final Rule HM-220E: <https://www.gpo.gov/fdsys/pkg/FR-2005-03-09/pdf/05-3859.pdf>

Final Rule HM-218E (see page 16136-16137): <https://www.gpo.gov/fdsys/pkg/FR-2009-04-09/pdf/E9-8021.pdf>

49 CFR parts 171-180: Hazardous Materials Regulations

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

(g) Manifolding cylinders in transportation. (1) Cylinder manifolding is authorized only under conditions prescribed in this paragraph (g)....

(i) Cylinders mounted in motor vehicles or in frames.

(1) MEGCs must conform to the requirements in §173.312. DOT specification cylinders mounted on motor vehicles or in frames must conform to the requirements specified in this paragraph (i).

(2) Seamless DOT specification cylinders longer than 2 m (6.5 feet) are authorized for transportation only when horizontally mounted on a motor vehicle or in an ISO framework or other framework of equivalent structural integrity in accordance with CGA TB-25 (IBR, see §171.7 of this subchapter).

The pressure relief device must be arranged to discharge unobstructed to the open air. In addition, for Division 2.1 (flammable gas) material, the pressure relief devices must be arranged to discharge upward to prevent any escaping gas from contacting personnel or any adjacent cylinders.

(3) Cylinders may not be transported by rail in container on freight car (COFC) or trailer on flat car (TOFC) service except under conditions approved by the Associate Administrator for Safety, Federal Railroad Administration.

MEGC Requirements:

§171.8 Definitions and abbreviations....*Multiple-element gas container or MEGC* means assemblies of UN cylinders, tubes, or bundles of cylinders interconnected by a manifold and assembled within a framework. The term includes all service equipment and structural equipment necessary for the transport of gases.

§173.312 Requirements for shipment of MEGCs.

(a) *General requirements.* (1) Unless otherwise specified, a MEGC is authorized for the shipment of liquefied and non-liquefied compressed gases. Each pressure receptacle contained in a MEGC must meet the requirements in §§173.301, 173.301b, 173.302b and 173.304b, as applicable.

(2) The MEGC must conform to the design, construction, inspection and testing requirements prescribed in §178.75 of this subchapter.

§178.74 Approval of MEGCs.

§178.75 Specifications for MEGCs....(d) *General design and construction requirements.*(3) Each pressure receptacle of a MEGC must be of the same design type, seamless steel, and constructed and tested according to one of the following ISO standards...

§180.217 Requalification requirements for MEGCs....(a) Periodic inspections. Each MEGC must be given an initial visual inspection and test in accordance with §178.75(i) of this subchapter before being put into service for the first time. After the initial inspection, a MEGC must be inspected at least once every five years...

Respectfully,

Victoria Lehman

Transportation Specialist- Regulatory Review & Reinvention (PHH-12)

U.S. Department of Transportation (U.S. DOT)

Pipeline and Hazardous Materials Safety Administration (PHMSA)

Office of Hazardous Materials Safety (OHMS)

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MULTILATERAL AGREEMENT M299

Under paragraph 1.5.1.1 of ADR concerning the carriage of different gases of Class 2 in
US Department of Transportation pressure receptacles in relation to 1.1.4.2

By derogation from the provisions of 6.2.3.4 (initial inspection and test), 6.2.3.5 (periodic inspection and test), 6.2.3.6 (approval of pressure receptacles), 6.2.3.7 (requirements for manufacturers), 6.2.3.8 (requirements for inspection bodies) and 6.2.3.9 (marking of refillable pressure receptacles) in ADR, gases and liquids listed in the tables of 4.1.4.1 P200 of ADR imported in accordance with 1.1.4.2 in refillable pressure receptacles approved by the US Department of Transportation may be carried from the location of the temporary storage to the end-users under the following conditions:

1. When imported from a non-ADR contracting party, the conformity of the pressure receptacles to this agreement shall be verified and recorded by the consignor. The verification record shall be kept for five years to allow for inspection by the competent authority and shall include the identification of the pressure receptacles, the name of the person making the verification and the date.
2. The pressure receptacles shall be marked and labelled in accordance with Chapter 5.2 of ADR.
3. All relevant requirements of ADR with regard to filling ratios and periodic testing frequency shall be fulfilled.
4. When the pressure receptacles are empty or when the end-user has no further use for the gas, the pressure receptacles shall not be refilled and shall be returned to the country from which they were imported.
5. The consignor for the ADR journey shall include the following entry in the transport document:

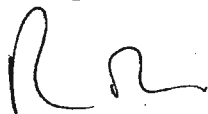
"Carriage agreed under the terms of multilateral agreement M299".

This multilateral agreement enters into force the date it has been signed by two of the Contracting Parties. This agreement shall be valid until 1 June 2019 for the carriage on the territories of those ADR Contracting Parties signatory to this agreement. If it is revoked before then by one of the signatories, it shall remain valid until the above mentioned date only for carriage on the territories of those ADR Contracting Parties signatory to this agreement which have not revoked it.

Done in London on

24 may 2016

The competent authority for ADR in the United Kingdom



ROH HATHLIA

Head of Dangerous Goods Division
Department for Transport
UNITED KINGDOM