



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

SEP 18 2018

Richard Schuyler  
Sr. Principal Mechanical Engineer  
Versum Materials  
357 Marian Avenue  
Tamaqua, PA 18252

Reference No. 18-0024

Dear Mr. Schuyler:

This letter is in response to your February 21, 2018, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to pressure relief devices (PRDs) for Multi-Element Gas Cylinders (MEGCs). Specifically, you seek confirmation of your understanding that MEGCs transporting “UN2451, Nitrogen trifluoride” do not require PRDs in accordance with the Compressed Gas Association (CGA) S-1.1 pamphlet, which is incorporated by reference in § 171.7 of the HMR.

Your understanding is correct. In accordance with § 173.301(f), a cylinder filled with a gas and offered for transportation must be equipped with one or more PRDs sized and selected as to type, location, quantity, and tested in accordance with CGA S-1.1. When a person refers to CGA S-1.1, Table 3, the “T” code for nitrogen trifluoride indicates only specific PRDs are authorized for optional use during transportation thus, the CG-4 or CG-5 device must be used when a PRD is permissively selected. Please note, when an optional PRD is selected, a person must comply with the requirements in §§ 173.301(f) and 178.75(f) for MEGCs installed with a PRD when applicable.

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

Sincerely,

Dirk Der Kinderen  
Chief, Standards Development Branch  
Standards and Rulemaking Division



Baker  
§ 178.75(f), 173.301 (f)  
Packaging Gen  
18-0024

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February 21, 2018

E-Mail  
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ATTN: Hazardous Materials Information Center

SUBJECT: Letter of Interpretation

REF: 49 CFR § 178.75(f)(1) and 173.301(f)

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. Versum Materials is currently expanding our fleet of Multi-Element Gas Containers (MEGCs) used for domestic and international transport of Nitrogen Trifluoride (NF3). During 3<sup>rd</sup> party design approval and MEGC certification process, the design basis for pressure relief devices (PRDs) has been questioned. For the reasons explained in the following paragraphs, we believe that PRDs are not required to be installed on NF3 MEGCs.

Per § 178.75 *Specifications for MEGCs*

(f) *Pressure relief devices. Each pressure receptacle must be equipped with one or more pressure relief devices as specified in § 173.301(f) of this subchapter. When pressure relief devices are installed, each pressure receptacle or group of pressure receptacles of a MEGC that can be isolated must be equipped with one or more pressure relief devices. Pressure relief devices must be of a type that will resist dynamic forces including liquid surge and must be designed to prevent the entry of foreign matter, the leakage of gas and the development of any dangerous excess pressure.*

(1) *The size of the pressure relief devices: CGA S-1.1 (IBR, see §171.7 of this subchapter) must be used to determine the relief capacity of individual pressure receptacles.*

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

(f) *Pressure relief device systems.*

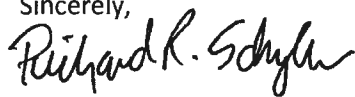
- (1) *Except as provided in paragraphs (f)(5) through (f)(7) and (j) of this section, and §171.23(a) of this subchapter, a cylinder filled with a gas and offered for transportation must be equipped with one or more pressure relief devices sized and selected as to type, location, and quantity, and tested in accordance with CGA S-1.1 (compliance with paragraph 9.1.1.1 is not required) and CGA Pamphlet S-7 (IBR, see §171.7 of this subchapter). The pressure relief device must be capable of preventing rupture of the normally filled cylinder when subjected to a fire test conducted in accordance with CGA C-14 (IBR, see §171.7 of this subchapter), or, in the case of an acetylene cylinder, CGA C-12 (IBR, see §171.7 of this subchapter).*

CGA S-1.1 is cited as the basis for selection and sizing of PRDs. The 12<sup>th</sup> edition of CGA S-1.1 is incorporated by reference in the Hazardous Material Regulations per 49 CFR §171.7 . In accordance with Table 3 of CGA S-1.1 (12<sup>th</sup> ed.), the following device assignment is listed for Nitrogen Trifluoride:

No PRD required. This device (i.e., CG-4 or CG-5) is to be selected if a PRD is used.

We have determined that no PRDs are required to be installed on NF3 MEGCs, per the above basis. We herein request a letter of interpretation to validate this design basis as required to support 3<sup>rd</sup> party approval and certification. Thank you in advance for your attention to this matter. Please do not hesitate to contact me if you have any questions or need any additional information.

Sincerely,



Richard R. Schuyler, P.E.  
Sr. Principal Mechanical Engineer  
Versum Materials