



**Billing Code: 4910-60-P**

**DEPARTMENT OF TRANSPORTATION**

**Pipeline and Hazardous Materials Safety Administration**

**[Docket No. PHMSA-2016-0078; Notice No. 2016-14]**

**Hazardous Materials: Use of DOT Specification 39 Cylinders for Liquefied Flammable Compressed Gas**

**AGENCY:** Pipeline and Hazardous Materials Safety Administration (PHMSA), DOT.

**ACTION:** Safety advisory notice, revised.

**SUMMARY:** PHMSA is issuing this revised safety advisory notice to address concerns of offerors and users of DOT Specification 39 (DOT-39) cylinders that exceed 75 cubic inches (in<sup>3</sup>) (1.23 L) and to provide clarification of the initial safety advisory notice we issued on this subject on December 13, 2016 (Notice No. 2016-14). DOT-39 cylinders exceeding 75 in<sup>3</sup> (1.23 L) should not contain liquefied flammable compressed cyclopropane, ethane, or ethylene, or liquefied petroleum gases. PHMSA advises against the filling or transporting of these gases in DOT-39 cylinders when the cylinder's internal volume exceeds 75 in<sup>3</sup> (1.23 L).

**FOR FURTHER INFORMATION CONTACT:** Refaat Shafkey, General Engineer, Engineering and Research Division, Office of Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., Washington, DC 20590. Telephone: (202) 366-4545 or email: [refaat.shafkey@dot.gov](mailto:refaat.shafkey@dot.gov).

## **SUPPLEMENTARY INFORMATION:**

### **A. Public Action Requested**

PHMSA advises that DOT-39 cylinders having an internal volume exceeding 75 cubic inches ( $\text{in}^3$ ) (1.23 L) should not contain liquefied flammable compressed cyclopropane, ethane, or ethylene, or liquefied petroleum gases. These gases were historically restricted to this volume for shipment in specification cylinders (currently § 173.304a). This limitation was based on extensive experience under special permits and the consideration that, in transportation and without the limitation, non-reusable cylinders of larger sizes (and lower integrity) would be used in place of authorized higher-integrity reusable cylinders. Use of these DOT-39 non-reusable cylinders in larger sizes would lower the level of transportation safety previously established through use of higher-integrity reusable cylinders for the shipment of flammable gases. See the Background section for additional information on this issue.

### **B. Safety Concern**

The release of a liquefied flammable compressed gas as result of the failure of a cylinder having an internal volume exceeding 75  $\text{in}^3$  (1.23 L) is a safety concern with potential to cause property damage, serious personal injury, or even death. A DOT-39 cylinder, without further size restriction, can have a volume of up to 1,526  $\text{in}^3$  (25 L) at a service pressure of 500 psig or less and, as such, can have up to 20 times the stored energy of a DOT-39 cylinder limited to 75  $\text{in}^3$  (1.23 L). This increased stored energy presents a greater safety risk in the event of a release. Additionally, because of the design specifications that allow for thinner walls when used at lower pressure, these cylinders may be at greater risk from corrosion or puncture. Given the known risks associated with cylinders that are filled with liquefied flammable compressed gases,

PHMSA is issuing this revised safety advisory notice to advise offerors and transporters of DOT-39 cylinders that those with an internal volume greater than 75 in<sup>3</sup> (1.23 L) should not be filled and/or transported with liquefied compressed cyclopropane, ethane, or ethylene, or with liquefied petroleum gases.

### C. **Background**

This revised safety advisory notice is being issued in part because of safety concerns stemming from a past rulemaking action impacting DOT-39 cylinders used for certain liquefied flammable compressed gases. In an October 30, 1998 notice of proposed rulemaking (NPRM),<sup>1</sup> the Research and Special Programs Administration (RSPA)—the predecessor administration to PHMSA—proposed to extend the 75 in<sup>3</sup> (1.23 L) volume limitation of DOT-39 cylinders to all liquefied flammable compressed gases by revising § 173.304 to delete Note 9 from the table at § 173.304(a)(2) and adding new sections §§ 173.304a and 173.304b.<sup>2</sup> RSPA received several comments in opposition to this proposal. RSPA published a final rule on August 8, 2002 and, based on the opposing comments, decided not to extend the 75 in<sup>3</sup> (1.23 L) limitation to all liquefied flammable compressed gases in a DOT-39 cylinder at that time. However, in the process of publishing the final rule, the administration inadvertently omitted the 75 in<sup>3</sup> (1.23 L) limitation from the Hazardous Materials Regulations (HMR; 49 CFR parts 171-180) for cyclopropane, ethane, ethylene, or liquefied petroleum gas.<sup>3</sup> Thus, historically, the HMR limited the internal volume of a DOT-39 cylinder to 75 in<sup>3</sup> (1.23 L) when used for these gases.

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<sup>1</sup> NPRM - Hazardous Materials: Requirements for DOT Specification Cylinders (HM-220D) [63 FR 58460]

<sup>2</sup> The respective additional requirements for liquefied compressed gases have since been redesignated at § 173.304a).

<sup>3</sup> Final Rule - Hazardous Materials: Requirements for Maintenance, Requalification, Repair and Use of DOT Specification Cylinders (HM-220D) [67 FR 51625]

On November 13, 2014, PHMSA accepted a petition for rulemaking (P-1622) from Worthington Cylinders to address this error. On July 26, 2016, PHMSA published in the *Federal Register* an NPRM titled, “Hazardous Materials: Miscellaneous Amendments Pertaining to DOT Specification Cylinders (RRR),” [81 FR 48977; Docket No. PHMSA-2011-0140 (HM-234)]<sup>4</sup> that proposed to extend the limit on the internal volume of DOT-39 cylinders to use with all liquefied flammable compressed gases, thus correcting the inadvertent omission and seeking comment regarding the possibility of expanding the applicability to capture those liquefied flammable compressed gases (e.g., difluoromethane (Refrigerant gas R 32)) either not reflected in the § 173.304a(a)(2) table or not considered a liquefied petroleum gas. Additionally, the NPRM further sought input on past experience with the transport of liquefied flammable compressed gases in DOT-39 cylinders larger than 75 in<sup>3</sup> (1.23 L) since implementation of the 2002 final rule.

Given the known risks associated with cylinders that are filled with liquefied flammable compressed gases, PHMSA is issuing this revised safety advisory notice to advise offerors and transporters of DOT-39 cylinders that those with an internal volume greater than 75 in<sup>3</sup> (1.23 L) should not be filled and/or transported with liquefied compressed cyclopropane, ethane, or ethylene, or with liquefied petroleum gases.

Issued in Washington, DC, on March 16, 2017.

**William S. Schoonover,**  
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Pipeline and Hazardous Materials Safety Administration.

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<sup>4</sup> Hazardous Materials: Miscellaneous Amendments Pertaining to DOT Specification Cylinders (RRR)(HM-234) [81 FR 48977], available at <https://www.gpo.gov/fdsys/pkg/FR-2016-07-26/pdf/2016-16689.pdf>

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