



Designation: **D7815—12 D7815 – 17**

Standard Practice for Handling, Transportation, and Storage of Halon 1211, Bromochlorodifluoromethane (CF₂BrCl)¹

This standard is issued under the fixed designation D7815; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers guidance and direction to suppliers, recyclers, reclaimers, purchasers, and users in the handling, transportation, and storage of Halon 1211.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[D7673/D7673M Specification for Halon 1211, Bromochlorodifluoromethane \(CF₂BrCl\)](#)

2.2 *CGA Standards:*³

[C-1 Methods for Pressure Testing Compressed Gas Cylinders](#)

[C-6 Standards for Visual Inspection of Steel Compressed Gas Cylinders](#)

[C-7 Guide to Preparation of Precautionary Labeling and Marking of Compressed Gas Containers Classification and Labeling of Compressed Gases](#)

[P-1 Standard for Safe Handling of Compressed Gases in Containers](#)

[SB-1 Safety Bulletin: Hazards of Refilling or Reusing Compressed Refrigerant \(Halogenated Hydrocarbon\) Gas Cylinders](#)

[SB-5 Safety Bulletin: Hazards of Reusing Disposable Refrigerant \(Halogenated Hydrocarbon\) Gas Cylinders](#)

[SB-18 Safety Bulletin: Use of Refrigerant \(Halogenated Hydrocarbon\) Recovery Cylinders](#)

2.3 *U.S. Government Standards:*⁴

[CFR Title 40, Part 82.106 Environmental Protection Agency, Warning Statement Requirements](#)

[CFR Title 49, Part 172 U.S. DOT, Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements](#)

[CFR Title 49, Part 172.101 U.S. DOT, Tables of Hazardous Materials and Special Provisions](#)

[CFR Title 49, Part 173 U.S. DOT, Specifications, Shippers-General Requirements for Shipping and Packagings](#)

[CFR Title 49, Part 178 U.S. DOT, Specifications for Packagings](#)

[CFR Title 49, Part 180 U.S. DOT, Continuing Qualification and Maintenance of Packagings](#)

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *containers*—storage vessel for Halon 1211.

3.1.2 *cylinders*—containers of Halon 1211.

¹ This practice is under the jurisdiction of ASTM Committee D26 on Halogenated Organic Solvents and Fire Extinguishing Agents and is the direct responsibility of Subcommittee D26.09 on Fire Extinguishing Agents.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from the Compressed Gas Association—Compressed Gas Association (CGA), 14501 George Carter Way, Suite 103, Chantilly, VA 20151, <http://www.cganet.com>.

⁴ Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20036; U.S. Government Publishing Office (GPO), 732 N. Capitol Street, NW, Washington, DC 20401-0001, <http://www.gpo.gov>.

3.1.3 *Halon 1211*—bromochlorodifluoromethane; a compound used to suppress a fire.

3.1.4 *insulated*—placed in an isolated situation to protect and prevent the transfer of damage.

4. Significance and Use

4.1 This practice provides requirements for the handling, transportation, and storage of Halon 1211 encountered in distribution through both commercial and military channels. It is intended to ensure that Halon 1211 is handled, transported, and stored in such a way that its physical property values are not degraded. Transport may be by various means, such as, but not limited to, highway, rail, water, and air.

5. Practice

5.1 To ensure safe handling, loading, storing, and transporting of material, personnel shall be trained in the CGA publications, CFR regulations, and other documents, as listed in Sections 2.2 and 2.3, respectively.

5.2 *Handling:*

5.2.1 Handling shall be in accordance with CGA Publication P-1 *Standard for Safe Handling of Compressed Gases in Containers* and as specified by the manufacturer.

5.2.1.1 Personnel who handle or store, or both, cylinders of Halon 1211 shall be trained properly to recognize and identify the characteristics of the product and the proper methods of safely handling full, partly full, and empty cylinders.

5.2.2 All Halon transfers between storage containers and recycling processes shall be performed by personnel trained in handling procedures.

5.2.3 Halon 1211 recycling and transfer processes shall be in conjunction with the equipment requirements specified by the manufacturer.

5.2.4 Halon 1211 handling shall be in nonsmoking, heater-free, ventilated areas to preclude product accumulation. Provisions shall be made to ensure that service areas limit Halon 1211 concentrations to not exceed 1 % by volume for 1 min and 0.01 % by volume for a time weighted exposure of 8 h.

5.2.5 Cylinders shall not be over filled. The liquid portion of the liquefied gas shall not completely fill the container's internal volume and the pressure shall not exceed five fourths the service pressure of the container at any temperature up to and including 130°F (54°C). The maximum permitted filling density for Type I product 130 °F (54 °C). To prevent excessive pressure in accordance with Specification D7673/D7673M shall be 100 lb/ft³, the fill density of Type I product within a container should not exceed that needed to achieve complete filling of the container at the maximum envisaged storage temperature. For example, for a U.S. DOT 4BW260 cylinder, the nitrogen partial pressure shall not exceed 129 psig at 70 °F (9.9 bar at 21 °C) for a 100 lb/ft³ (1602 kg/m³) fill density, which yields a total pressure of 150 psig at 70 °F (11.4 bar at 21 °C). For this example, the safe working pressure of the 4BW260 cylinder is not exceeded for temperatures below 131 °F (55 °C). Filling density requirements for Type II product (pure specification) are specified in CFR Title 49, Part 173.304 and CFR Title 49, Part 173.305. (See Figs. 1 and 2).

5.2.6 Handling of materials should be done in a manner that prevents contamination or commingling of materials other than Halon 1211.

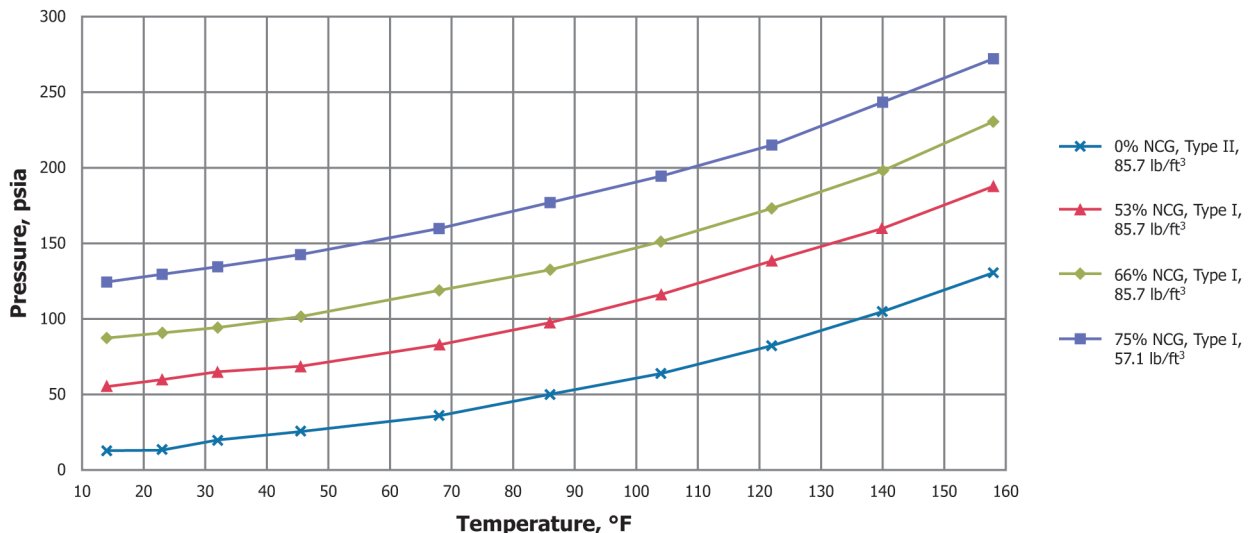


FIG. 1 Vapor Pressure of Halon 1211 versus Temperature Pressure versus Temperature, English Units