



Designation: D7123 – 21

Standard Practice for Handling, Transportation, and Storage of HCFC Blend B (CF₃CCl₂H, Ar, and CF₄)¹

This standard is issued under the fixed designation D7123; 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, reclaimers, purchasers, and users in the handling, transportation, and storage of HCFC Blend B.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standard:*²

D7122 Specification for HCFC Blend B (CF₃CCl₂H, Ar, and CF₄)

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 Classification and Labeling of Compressed Gases

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.

Current edition approved June 1, 2021. Published June 2021. Originally approved in 2004. Last previous edition approved in 2017 as D7123-17. DOI: 10.1520/D7123-21.

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 Compressed Gas Association (CGA), 8484 Westpark Drive, Suite 220, McLean, VA 22102, <http://www.cganet.com>.

P-1 Standard for Safe Handling of Compressed Gases in Containers

SB-1 Hazards of Refilling or Reusing Compressed Refrigerant (Halogenated Hydrocarbon) Gas Cylinders

SB-18 Use of Refrigerant (Halogenated Hydrocarbons) Recovery Cylinders

2.3 *U.S. Government Standards:*⁴

40 CFR Part 82.106 Warning Statement Requirements

49 CFR Part 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, Training Requirements, and Security Plans

49 CFR Part 172.101 Purpose and Use of Hazardous Materials Table

49 CFR Part 173 Shippers—General Requirements for Shipments and Packagings

49 CFR Part 178 Specifications for Packagings

49 CFR Part 180 Continuing Qualification and Maintenance of Packagings

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *containers, n*—storage vessels for HCFC Blend B.

3.1.2 *cylinders, n*—containers of HCFC Blend B.

3.1.3 *HCFC Blend B, n*—tertiary blend comprised primarily of HCFC-123 (2,2-dichloro-1,1,1-trifluoroethane); a compound used to inert, extinguish, or suppress a fire or explosion hazard. The blend also contains argon and tetrafluoromethane.

3.1.4 *insulated, adj*—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 HCFC Blend B encountered in distribution through both commercial and military channels. It is intended to ensure that HCFC Blend B is handled, transported, and stored in such a way that its physical property

⁴ Code of Federal Regulations (CFR) documents are available from U.S. Government Publishing Office (GPO), 732 N. Capitol Street, NW, Washington, DC 20401, <http://www.gpo.gov>.

virtues 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, unloading, storing, and transporting of material, personnel shall be trained in the CGA publications and 49 CFR regulations as listed in 2.2 and 2.3, respectively.

5.2 Handling:

5.2.1 Handling shall be in accordance with CGA Publication P-1.

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

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

5.2.2.1 HCFC Blend B recycling and transfer processes shall be in conjunction with the equipment specified by the manufacturer.

5.2.3 To preclude product accumulation and decomposition, HCFC Blend B handling shall be performed in ventilated areas that are nonsmoking and free of portable heaters with high-temperature elements. Provisions shall be made to ensure that service areas limit HCFC Blend B concentrations do not exceed 20 000 ppm (2 %) by volume for 1 min and 50 ppm by volume for a time weighted exposure of 8 h.

5.2.4 Cylinders shall not be overfilled. The liquid portion of the HCFC Blend B must not completely fill the container's internal volume at any temperature up to and including 130 °F (54 °C). The maximum permitted filling density for HCFC

Blend B shall be 86 lb/ft³ (1377 kg/m³). Filling density requirements are specified in 49 CFR Part 173.304 and 49 CFR Part 173.305. Recommended fill density is 76 lb/ft³ (1219 kg/m³) or less.

5.2.5 Handling of materials should be done in a manner that prevents contamination or comingling of halocarbons other than HCFC Blend B.

5.2.6 Cylinders shall be free of dirt and contamination that would contribute to or would cause deterioration of product during shipment or storage. Precautions should be taken to prevent the entry of oil, water, or any other foreign matter into containers. Unique coatings or preservatives applied prior to shipment to protect the containers are not considered contamination.

5.3 Transportation:

5.3.1 Transportation shall be as specified in accordance with Department of Transportation (DOT) regulations of 49 CFR.

5.3.1.1 Shipment of materials between collectors, recyclers, and reclaimers should be within approved DOT guidelines for Class 2, Division 2.2, regulated materials. Any further provisions for special transportation or packaging should be agreed upon between the collectors, recyclers, and reclaimers.

5.3.1.2 The minimum design pressure requirements shall be as indicated in 49 CFR Part 173.304. The pressure inside the container at 70 °F (21 °C) shall not exceed the service pressure for which the container is marked. The pressure inside the container at 130 °F (54 °C) shall not exceed ¾ times the service pressure for which the container is marked. Fig. 1 and Fig. 2 illustrate the effect of temperature on a typical storage cylinder filled with HCFC Blend B. As HCFC Blend B is comprised of compressed gases in solution and is not a

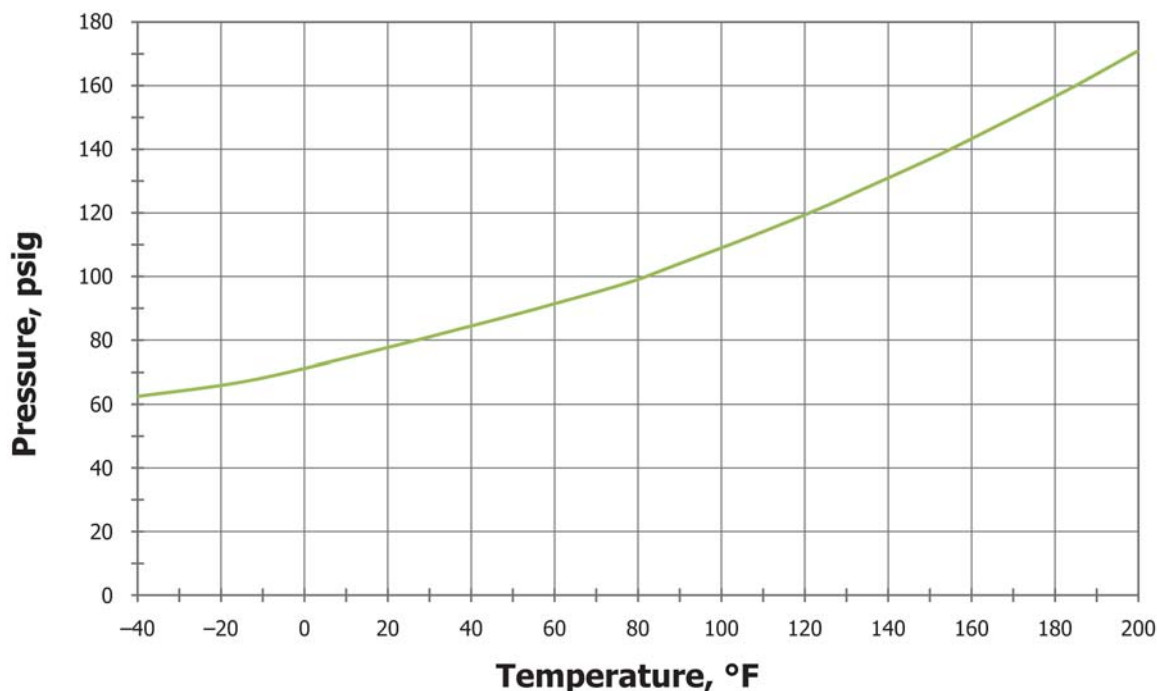


FIG. 1 Pressure Versus Temperature Diagram of HCFC Blend B, English Units