



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

2. Referenced Documents

2.1 ASTM Standards:

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

2.2 CGA Standards:²

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

P-1 Safe Handling of Compressed Gases in Containers

SB-1 Safety Bulletin: Hazards of Refilling 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 Hydrocarbons) Recovery Cylinders

2.3 U.S. Government Standards:³

Code of Federal Regulations (CFR) Title 40, Part 82.106, Environmental Protection Agency, Warning Statement Requirements

CFR Title 49, Part 172, U.S. Department of Transportation (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, 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 vessels for HCFC Blend B.

3.1.2 *cylinders*—containers of HCFC Blend B.

3.1.3 *HCFC Blend B*—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*—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 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 Title 49 CFR regulations as listed in Sections 2.2 and 2.3, respectively.

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 Available from Compressed Gas Association. Online, www.cganet.com.

³ Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20036.

5.2 Handling:

5.2.1 Handling shall be in accordance with CGA P-1, *Safe Handling of Compressed Gases in Containers*.

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 HCFC Blend B handling shall be in nonsmoking, heater-free, ventilated areas to preclude product accumulation. 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 Title 49 CFR, 173.304 and Title 49 CFR, 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 commingling 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 DOT regulations of Title 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 Title 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 5/4 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 compressed liquefied gas, typical cylinder fill density variations do not impact the pressure enough to provide an isometric diagram.

5.3.2 Transportation shall be by suitable vehicles to preclude cylinder damage by excessive mechanical vibration, shock, freezing, or deleterious high temperatures throughout the entire transport route.

5.3.2.1 If cylinders are expected to be subjected to unacceptable transport conditions, the cylinders should be placed under insulated conditions.

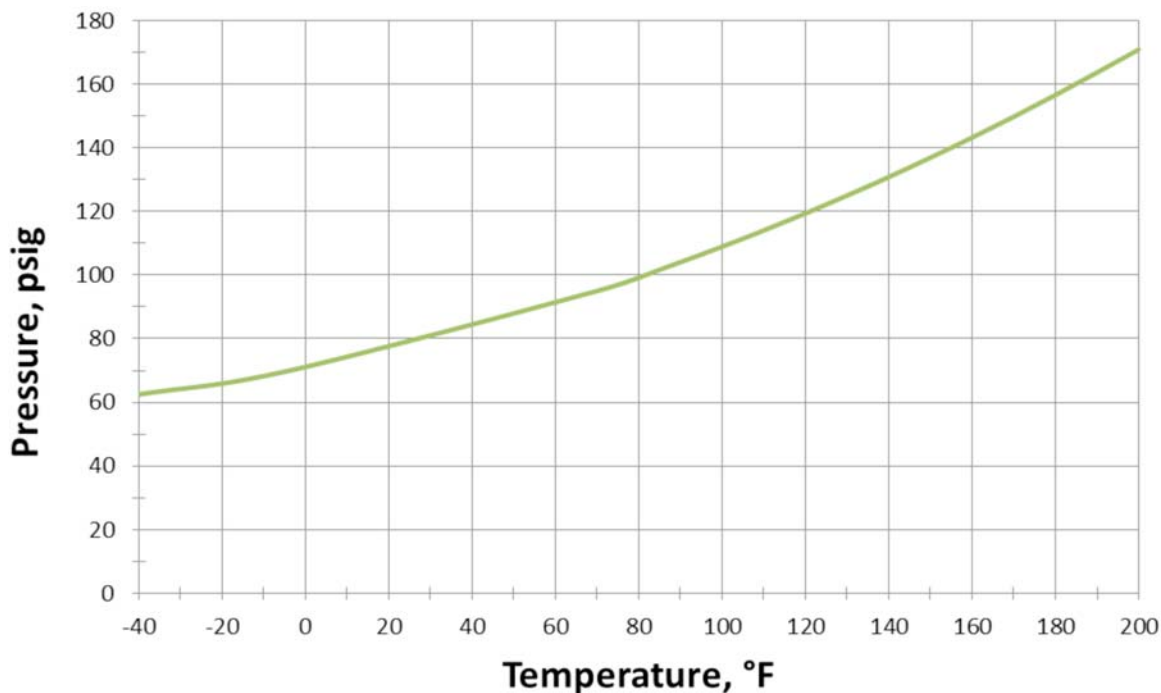


FIG. 1 Pressure Versus Temperature Diagram of HCFC Blend B, English Units