



Designation: ~~D7123—11~~ D7123 – 17

## Standard Practice for Handling, Transportation, and Storage of HCFC Blend B (CF<sub>3</sub>CCl<sub>2</sub>H, Ar, and CF<sub>4</sub>)<sup>1</sup>

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 ( $\epsilon$ ) 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: Standard:~~<sup>2</sup>

~~D7122 Specification for HCFC Blend B (CF<sub>3</sub>CCl<sub>2</sub>H, Ar, and CF<sub>4</sub>)~~

2.2 ~~CGA Standards:~~<sup>3</sup>

~~C-1 Methods for Pressure Testing Compressed Gas Cylinders~~

~~C-6 Standards Standard 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 Hydrocarbons) Recovery Cylinders~~

2.3 ~~U.S. Government Standards:~~<sup>4</sup>

~~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.

<sup>1</sup> 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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<sup>2</sup> 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.

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

<sup>4</sup> 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.

3.1.2 *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.

##### 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 To preclude product accumulation and decomposition, HCFC Blend B handling shall be performed in nonsmoking, heater-free, ventilated areas to preclude product accumulation, ventilated areas that are nonsmoking and free of portable heaters. Provisions shall be made to ensure that service areas limit HCFC Blend B concentrations do not exceed ~~20,000~~ 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)~~ 130 °F (54 °C). The maximum permitted filling density for HCFC Blend B shall be 86 lb/ft<sup>3</sup> (1377 kg/m<sup>3</sup>). Filling density requirements are specified in Title 49 CFR, 173.304 and Title 49 CFR, 173.305. Recommended fill density is 76 lb/ft<sup>3</sup> (1219 kg/m<sup>3</sup>) 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)~~ 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)~~ 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 low or 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.

5.3.3 Compressed gas cylinder permanent marking requirements shall be as specified under Part 178 of Title 49 CFR and must be maintained in legible condition as required by Part 173 of Title 49 CFR. Warning labels shall be affixed to cylinders conforming to requirements of Part 82.106 of Title 40 CFR.

##### 5.4 Storage:

5.4.1 Storage shall be in accordance with CGA P-1, *Safe Handling of Compressed Gases in Containers*, in qualified cylinders in accordance with Parts 173 and 178 of Title 49 CFR.