Designation: D8061 – 16

Standard Practice for Handling, Transportation, and Storage of 2-Bromo-3,3,3-Trifluoro-1-Propene ($CF_3CBr=CH_2$)[1]

This standard is issued under the fixed designation D8061; 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 2-Bromo-3,3,3-Trifluoro-1-Propene ("2-BTP").

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]

D8060 Specification for 2-Bromo-3,3,3-Trifluoro-1-Propene ($CF_3CBr=CH_2$)

2.2 *U.S. Government Standards:*[3]

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

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *2-BTP, n*—2-Bromo-3,3,3-Trifluoro-1-Propene ($CF_3CBr=CH_2$); a compound used to inert, extinguish, or suppress a fire or explosion hazard.

3.1.2 *containers, n*—storage vessels for 2-BTP.

3.1.3 *cylinders, n*—containers of 2-BTP.

3.1.4 *insulated, v*—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 2-BTP encountered in distribution through both commercial and military channels. It is intended to ensure that 2-BTP 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 to follow guidance contained within the manufacturer's Safety Data Sheet for this substance.

5.2 *Handling:*

5.2.1 Handling shall be in accordance with the current manufacturer's Safety Data Sheet for this substance.

5.2.1.1 Personnel who handle or store, or both, containers of 2-BTP 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 containers.

5.2.2 All 2-BTP transfers between storage containers and recycling processes shall be performed by personnel trained in handling procedures.

5.2.2.1 2-BTP recycling and transfer processes shall be in conjunction with the equipment specified by the manufacturer.

5.2.3 To preclude product accumulation and decomposition, 2-BTP 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 2-BTP concentrations do not exceed 10 000 ppm (1 %) by volume for 1 min in service areas.

5.2.4 Containers shall not be overfilled. The liquid portion of the 2-BTP 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 2-BTP shall be 87 lb/ft^3 (1400 kg/m^3).

[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 July 1, 2016. Published July 2016. DOI: 10.1520/D8061-16.

[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 U.S. Government Publishing Office, 732 N. Capitol St., NW, Washington, DC 20401–0001, http://www.gpo.gov.

5.2.5 Handling of materials should be done in a manner that prevents contamination or commingling of halocarbons other than 2-BTP.

5.2.6 Containers 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.

5.2.7 Containers shall be vacuumed, minimum of 27 in. (686 mm) mercury at sea level, or purged with dry nitrogen to remove air and moisture contamination prior to being filled with this substance. This material is sensitive to air and moisture.

5.3 *Transportation:*

5.3.1 This substance is not classified as hazardous under DOT regulations of Title 49 CFR. A container superpressurized with nitrogen above the inherent vapor pressure of the neat substance may require classification (for example, fire extinguisher system bottle). Any classification will depend upon the specifications of the container and its fill pressure.

5.3.1.1 Shipment of materials between collectors, recyclers, and reclaimers should be in containers agreed upon between the collectors, recyclers, and reclaimers.

5.3.1.2 Typical container fill density variations do not impact the pressure enough to provide an isometric diagram. (See Figs. 1 and 2.)

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

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

5.4 *Storage:*

5.4.1 Containers should be stored in areas that will protect vessels from physical and environmental damage and tampering from unauthorized personnel.

5.4.2 Containers shall be clearly marked and labeled to identify whether the 2-BTP contained does or does not conform to Specification D8060.

5.4.3 Insulation shall be placed on pallets or shoring, and provisions should be made to prevent excessive shock or thermal fluctuations to containers.

5.4.4 Containers shall be stored in a manner that will prevent contamination from external sources.

5.4.4.1 If 2-BTP meeting the standards of Specification D8060 is stored in the same area as material not meeting the standards, storage shall be segregated or clearly identifiable as not being similar.

6. Inspection

6.1 2-BTP that is reclaimed using 2-BTP manufacturer-approved reclamation systems may be released for reissue, provided test examination to validate the material to specification is fulfilled.

6.1.1 Reclaimed 2-BTP that cannot be proven to comply with Specification D8060 shall not be reissued. The material will be processed by environmentally safe methods until conformance to the product standard is achieved.

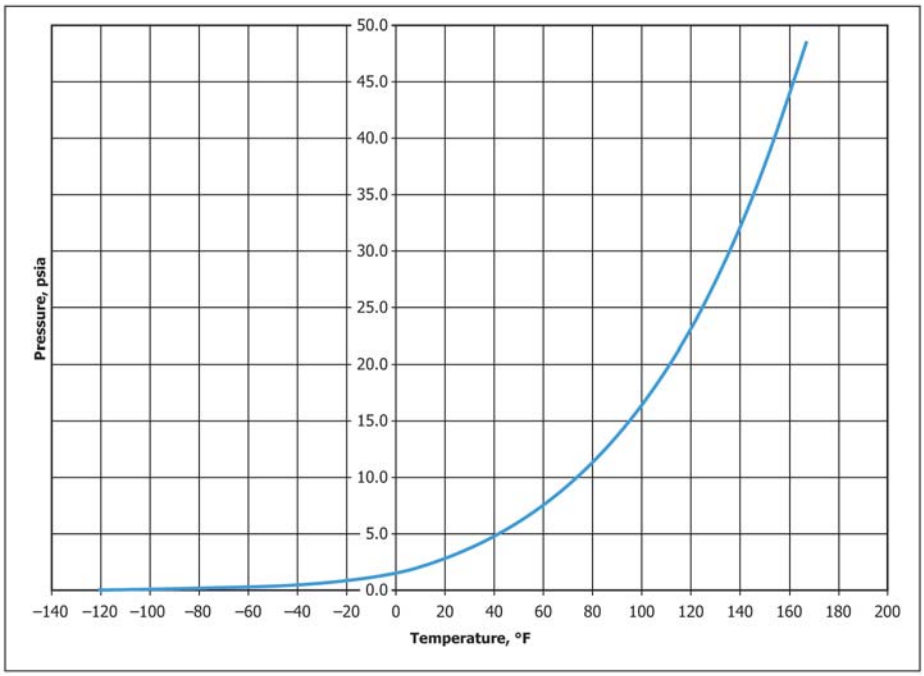

FIG. 1 Pressure Versus Temperature Diagram of 2-BTP, English Units

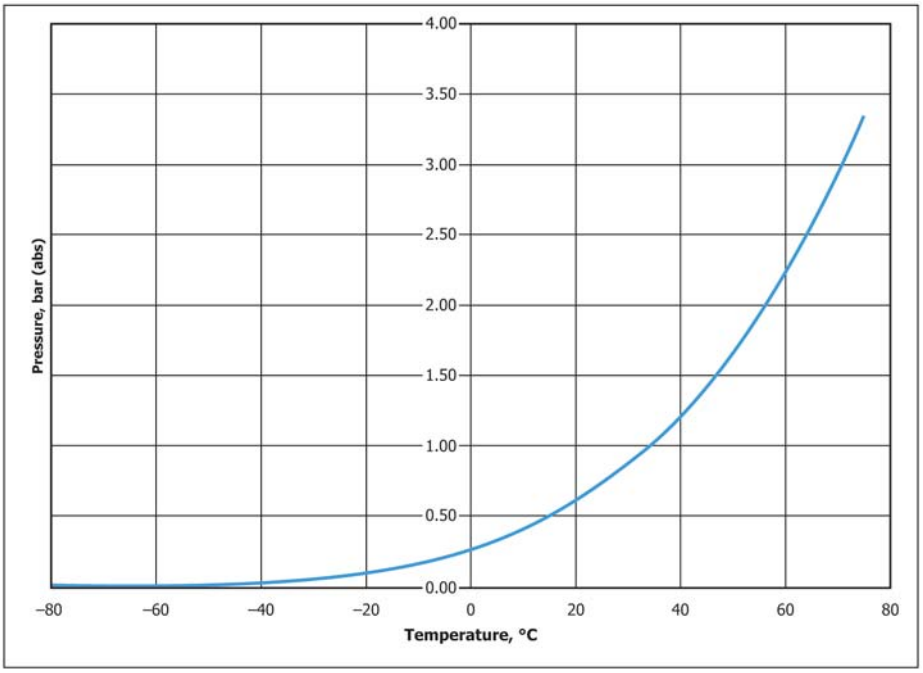

FIG. 2 Pressure Versus Temperature Diagram of 2-BTP, SI Units

7. Keywords

7.1 2-bromo-3,3,3-trifluoro-1-propene; 2-bromo-3,3,3-trifluoropropene; 2-BTP; bromotrifluoropropene; BTP; $CF_3CBr=CH_2$; fire extinguishant; fire suppressant; Halotron[4] BrX; handling; R-1233B1; reclamation; recovery; storage; transport

[4] Halotron is a trademark of American Pacific Corporation.