

## CHAPTER 4. CHEMICAL AND PHYSICAL INFORMATION

### 4.1 CHEMICAL IDENTITY

Bromodichloromethane is a trihalomethane with one bromide atom and two chloride atoms. It is a colorless liquid with relatively high vapor pressure and high water solubility. It was previously used as a halogenated fire retardant. Bromodichloromethane is a disinfection byproduct formed during the chlorination of waters.

Table 4-1 lists common synonyms, trade names, and other pertinent identification information for bromodichloromethane.

**Table 4-1. Chemical Identity of Bromodichloromethane**

Characteristic	Information	Reference
Chemical name	Bromodichloromethane	HSDB 2012
Synonym(s) and registered trade name(s)	Dichlorobromomethane; BDCM; monobromodichloromethane; methane, bromodichloro-; Halon 1021	HSDB 2012; NIOSH 2015
Chemical formula	CHBrCl <sub>2</sub>	HSDB 2012
Chemical structure	$\begin{array}{c} \text{Br} \\   \\ \text{Cl}-\text{C}-\text{Cl} \\   \\ \text{H} \end{array}$	Haynes 2014
CAS Registry Number	75-27-4	HSDB 2012

CAS = Chemical Abstracts Service

### 4.2 PHYSICAL AND CHEMICAL PROPERTIES

Table 4-2 lists important physical and chemical properties of bromodichloromethane.

## 4. CHEMICAL AND PHYSICAL INFORMATION

**Table 4-2. Physical and Chemical Properties of Bromodichloromethane**

Property	Information	Reference
Molecular weight	163.829	Haynes 2014
Color	Colorless	O'Neil 2013
Physical state	Liquid	O'Neil 2013
Melting point	-56.0°C	Haynes 2014
Boiling point	90°C	Haynes 2014
Density:		Haynes 2014
at 20°C/4°C	1.980	
Odor	No data	
Odor threshold:		
Water	No data	
Air	No data	
Taste threshold	No data	
Solubility:		
Water	3,030 mg/L at 30°C	Yalkowsky et al. 2010
Organic solvent(s)	Very soluble in ethanol, acetone, and benzene; slightly soluble in carbon tetrachloride	Haynes 2014
Partition coefficients:		
Log K <sub>ow</sub>	2.00	HSDB 2012
Log K <sub>oc</sub>	1.8	Mabey et al. 1982
Vapor pressure		
at 20°C	50 mm Hg	HSDB 2012
Henry's law constant	2.12x10 <sup>-3</sup> at 25°C	EPA 1987
Autoignition temperature	No data	
Flashpoint	No data	
Flammability limits	No data	
Conversion factors	1 ppm=6.70 mg/m <sup>3</sup> 1 mg/m <sup>3</sup> =0.15 ppm	Verschueren 1977
Explosive limits	No data	