ALBEMARLE®

BROMINE

Description

Bromine (Br_2) is a reddish brown liquid that gives off dark red, highly corrosive fumes having a sharp, penetrating odor.

Applications

Bromine is used in the manufacture of pharmaceuticals, dyes, pesticides, flame retardants, germicides, photographic chemicals, perfumes, heavy brines and other chemicals.

Specifications

Bromine, wt % (by difference)	99.97
Chlorine, ppm max	100
Non-volatile matter, ppm max	30
Total organics, ppm max	50
Water, ppm max	30

Physical Properties

Molecular weight	159.8
Boiling point at 760 mm Hg, °C (°F)	58.8 (137.8)
Freezing point, °C (°F)	-7.2 (19)
Density, g/mL at 20°C (68 °F)	3.12
Density, lb/gal at 20 °C (68°F)	26.04
Coefficient of cubical expansion, 0 to 30°C	0.0011
Vapor density, Air = 1	5.52
Vapor pressure, mm Hg, 20°C (68°F)	172
Viscosity, 20°C (68°F), centistokes	0.33
Latent heat of vaporization, cal/g at b.p.	44.5
Solubility in water, 20°C (68°F), g /100 g	3.2
Dielectric constant, 10^5 Hz, 25°C (77°F)	3.33
Entropy, liquid, cal/mole °K, 25°C (77°F)	36.4
Specific heat, 25°C, cal/mole/°C	18.09
Surface tension, dynes/cm, 58.6°C (137.5°F)	35.4
Flash point	none
Fire point	none
Refractive index, 15°C (59°F)/D	1.66
Compressibility, saturated vapors, PV/RT, 25°C (77°F)	0.991
Critical Properties	
Pc, psia	1,494
Tc, °C (°F)	311(591.8)
ρc, g/mL	1.18
ξc, (critical compressibility factor)	0.286
Heat of fusion, BTU/lb formula wt.	4,557
Heat of formation, BTU/lb formula wt.	
Ideal gas, 25°C (77°F)	13,285
Entropy, BTU/ lb formula wt., °F	
Ideal gas, 25°C (77°F)	58.60
Free energy of formation, BTU/lb formula wt.	
Ideal gas, 25°C (77°F)	1,350

Shipping Information

Container Information

Bromine is shipped in tank trailers, tank cars, and isotanks.

Shipping Classification

Proper shipping name:	Bromine
Hazard classification:	8 (Corrosive), 6.1 (Poison Inhalation Hazard)
ID number:	UN1744
DOT Packing Group:	I
Placard:	Primary: Class 8 Corrosive; Subsidiary: Class 6 Poison Inhalation Hazard (Class 6 Toxic for international)
Label:	Primary: Class 8 Corrosive; Subsidiary: Class 6 Poison Inhalation Hazard (Class 6 Toxic for international)
Mark:	INHALATION HAZARD and shipping name BROMINE

NOTE: Class 6 Poison Inhalation Hazard placards or labels are required for domestic shipments and Class 6 Toxic placards or labels are required for international shipments.

Safety and Handling Information

For specific safety and handling information, please refer to the current Material Safety Data Sheet, which is available upon request.

Chemical Registration Numbers

CAS:	7726-95-6
EINECS:	231-778-1

ALBEMARLE®

AMERICAS 451 Florida Street • Baton Rouge, Louisiana 70801-1765 • Phone: 225-388-7402 • Toll-Free: 800-535-3030 • Fax: 225-388-7626
EUROPE Parc Scientifique Einstein • Rue du Bosquet 9 • B-1348 Louvain-la-Neuve Sud, Belgium • Phone: 32-10-48-1711 • Fax: 32-10-48-1717
ASIA PACIFIC 111 Somerset Road #13-03 • Singapore 238164 • Phone: 65-732-6286 • Fax: 65-737-4155
16th Floor, Fukoku Seimei Building • 2-2, Uchisaiwaicho, 2-Chome • Chiyoda-ku, Tokyo 100, Japan • Phone: 81-3-5251-0791 • Fax: 81-3-3500-5623
China World Tower, Room 1317 • No. 1 Jian Guo Men Wai Avenue • Beijing 100004 China • Phone: 86-10-6505-4153 • Phone: 86-10-6505-4154 • Fax: 86-10-6505-4150

