

Description Bromine (Br₂) 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

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|-------------------------------------|-------|
| 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

| | |
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| 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

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