2-BROMOBUTANE

BBT

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
sec-Butyl bromide
Methyl ethyl bromo-methane

Liquid Colorless

Sinks in water

Avoid contact with liquid and vapor. Keep people away.
Wear self-contained breathing apparatus and full protective clothing.
Shut off sources of ignition. Call fire department.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

EXTREMELY FLAMMABLE
Containers may explode in fire.
Flashback may occur along vapor trail.
Forms explosive mixtures when mixed with air.
Water may be ineffective against fire.
Wear self-contained breathing apparatus and full protective clothing.
Extinguish with CO_2, dry chemical, or foam.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Harmful if inhaled or absorbed through the skin.
Irritating to the eyes, nose, throat, and upper respiratory tract.
Move victim to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
May be harmful if swallowed or absorbed through the skin.
Irritating to the eyes and skin.
Remove contaminated clothing and shoes.
IF IN EYES: immediately flush with running water for at least 15 minutes.
IF SWALLOWED and victim is CONSCIOUS: have victim drink water and induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS: do nothing except keep victim warm.

Water Pollution

Effect of low concentrations on aquatic life are not known.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of local water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Collection Systems: Pump; Dredge
Do not burn

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: $CH_3CHBrCH_2CH_3$
2.3 IMO/UN Designation: 3.2/2339
2.4 DOT ID No.: 2339
2.5 CAS Registry No.: 78-76-2
2.6 NAERG Guide No.: 130
2.7 Standard Industrial Trade Classification: 51139

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Approved respirator, chemical-resistant gloves, safety goggles, other protective clothing.
3.2 Symptoms Following Exposure: Irritating to eyes, nose, throat, upper respiratory tract, and skin. Symptoms of exposure include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.
3.3 Treatment of Exposure: Call a physician. EYES: Flush with running water for at least 15 minutes. SKIN: remove contaminated clothing and shoes. Flush affected areas with plenty of running water. Wash with soap and water. INHALATION: Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. INGESTION: If victim is conscious, have victim drink water and have victim induce vomiting. If victim is unconscious, do nothing except keep victim warm.
3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 2; TD_{Lo} = 3.0 g/kg (ipr, mouse)
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Suspected carcinogen.
3.10 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of skin.
3.12 Odor Threshold: Currently not available
3.13 IDLH Value: Not listed.
3.14 OSHA PEL-TWA: Not listed.
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: 70°F C.C.
4.2 Flammable Limits in Air: Currently not available
4.3 Fire Extinguishing Agents: Foam, CO_2, dry chemical.
4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective against fire.
4.5 Special Hazards of Combustion Products: Toxic fumes of Br
4.6 Behavior in Fire: May form explosive mixtures with air in a fire.
4.7 Auto Ignition Temperature: Currently not available
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: Currently not available
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 28.6 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 12.0 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: No reaction
5.2 Reactivity with Common Materials: No reaction
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity: Currently not available
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): Currently not available
6.4 Food Chain Concentration Potential: Currently not available
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: (2)
Human Oral hazard: -
Human Contact hazard: -
Reduction of amenities: -

7. SHIPPING INFORMATION

7.1 Grades of Purity: 98%
7.2 Storage Temperature: Currently not available
7.3 Inert Atmosphere: None
7.4 Venting: None
7.5 IMO Pollution Category: Currently not available
7.6 Ship Type: Currently not available
7.7 Barge Hull Type: Currently not available

8. HAZARD CLASSIFICATIONS

8.1 49 CFR Category: Flammable liquid
8.2 49 CFR Class: 3
8.3 49 CFR Package Group: II
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification: Not listed
8.6 EPA Reportable Quantity: Not listed.
8.7 EPA Pollution Category: Not listed.
8.8 RCRA Waste Number: Not listed
8.9 EPA FWPCA List: Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Liquid
9.2 Molecular Weight: 137.04
9.3 Boiling Point at 1 atm: 196.5°F = 91.4°C = 365°K
9.4 Freezing Point: -169.4°F = -111.9°C = 161.3°K
9.5 Critical Temperature: Currently not available
9.6 Critical Pressure: Currently not available
9.7 Specific Gravity: 1.258 at 20°C
9.8 Liquid Surface Tension: 25.3 dyne/cm = 0.025 N/m at 20°C
9.9 Liquid Water Interfacial Tension: Currently not available
9.10 Vapor (Gas) Specific Gravity: 4.7
9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available
9.12 Latent Heat of Vaporization: Currently not available
9.13 Heat of Combustion: Currently not available
9.14 Heat of Decomposition: Currently not available
9.15 Heat of Solution: Currently not available
9.16 Heat of Polymerization: Currently not available
9.17 Heat of Fusion: 21.62
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
68	78.570		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	INSOLUBLE		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE	0	0.177
						25	0.183
						50	0.189
						75	0.195
						100	0.201
						125	0.206
						150	0.212
						175	0.218
						200	0.224
						225	0.230
						250	0.236
						275	0.242
						300	0.248
						325	0.254
						350	0.260
						375	0.266
						400	0.272
						425	0.278
						450	0.284
						475	0.290
						500	0.296
						525	0.302
						550	0.308
						575	0.314
						600	0.320