

ALLYL BROMIDE

ABR

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Bromallylene 3-Bromopropene 3-Bromopropylene	Liquid Colorless to light yellow Irritating odor Sinks in water. Flammable, irritating vapor is produced
<p>Shut off ignition sources. Call fire department. Evacuate area in case of large discharge. Avoid contact with liquid and vapor; avoid inhalation. Isolate and remove discharged material. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	<p>FLAMMABLE. POISONOUS GASES MAY BE PRODUCED IN FIRE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves). Extinguish with dry chemicals, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>
Exposure	<p>Call for medical aid.</p> <p>VAPOR Irritating to eyes, nose and throat. If inhaled will cause headache, dizziness, coughing or difficult breathing. Move victim to fresh air. If breathing is difficult, give oxygen.</p> <p>LIQUID Irritating to skin and eyes. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.</p>
Water Pollution	<p>Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>

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: $\text{CH}_2 = \text{CHCH}_2\text{Br}$
2.3 IMO/UN Designation: 3.2/1099
2.4 DOT ID No.: 1099
2.5 CAS Registry No.: 106-95-6
2.6 NAERG Guide No.: 131
2.7 Standard Industrial Trade Classification: 51139

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Goggles and face shield; protective clothing; self-contained breathing apparatus for high vapor concentrations.
- 3.2 **Symptoms Following Exposure:** Inhalation of vapor irritates mucous membranes and causes dizziness, headache, and lung irritation. Contact with liquid irritates eyes and skin. Ingestion causes irritation of mouth and stomach.
- 3.3 **Treatment of Exposure:** INHALATION: remove from exposure; if not breathing, give artificial respiration; if breathing is difficult, give oxygen; call physician. EYES: flush with water for at least 15 min. and call physician. SKIN: flush with water; get medical attention for skin irritation. INGESTION: do NOT induce vomiting; get medical attention.
- 3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 4; oral $\text{LD}_{50} = 30 \text{ mg/kg}$ (guinea pig)
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Currently not available
3.10 **Vapor (Gas) Irritant Characteristics:** Vapors are moderately irritating such that personnel will not usually tolerate moderate or high vapor concentrations.
3.11 **Liquid or Solid Characteristics:** Fairly severe skin irritant. May cause pain and second-degree burns after a few minutes' contact.
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: 28°F C.C.
4.2 Flammable Limits in Air: 4.4%-7.3%
4.3 Fire Extinguishing Agents: Dry chemical, alcohol foam, or carbon dioxide
4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective.
4.5 Special Hazards of Combustion Products: Toxic hydrogen bromide and bromine gases formed in fire.
4.6 Behavior in Fire: Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back.
4.7 Auto Ignition Temperature: 563°F
4.8 Electrical Hazards: I, D
4.9 Burning Rate: 3.5 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichiometric Air to Fuel Ratio: Currently not available
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): Currently not available
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: Avoid strong oxidizing materials, strong bases, and mineral acid chlorides.
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Will not polymerize.
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: None
6.5 GESAMP Hazard Profile: Bioaccumulation: 0
Damage to living resources: 4
Human Oral hazard: 2
Human Contact hazard: II
Reduction of amenities: XXX

7. SHIPPING INFORMATION

- 7.1 Grades of Purity: Commercial
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: Not pertinent
7.4 Venting: Pressure-vacuum
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: I
8.4 Marine Pollutant: Yes
8.5 NFPA Hazard Classification:
- | Category | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 3 |
| Flammability (Red)..... | 3 |
| Instability (Yellow)..... | 1 |
- 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: 121
9.3 Boiling Point at 1 atm: 158°F = 70°C = 343°K
9.4 Freezing Point: -182°F = -119°C = 154°K
9.5 Critical Temperature: Not pertinent
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 1.4161 at 20°C (liquid)
9.8 Liquid Surface Tension: 26.9 dynes/cm = 0.0269 N/m at 20°C
9.9 Liquid Water Interfacial Tension: (est.) 40 dynes/cm = 0.040 N/m at 20°C
9.10 Vapor (Gas) Specific Gravity: 4.2
9.11 Ratio of Specific Heats of Vapor (Gas): 1.1210
9.12 Latent Heat of Vaporization: (est.) 110 Btu/lb = 59 cal/g = 2.5 X 10⁵ J/kg
9.13 Heat of Combustion: (est.) 6,700 Btu/lb = 3,700 cal/g = 150 X 10³ J/kg
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Not pertinent
9.16 Heat of Polymerization: Not pertinent
9.17 Heat of Fusion: Currently not available
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
65	89.570	34	0.340	32	0.749	30	0.627
70	89.230	36	0.340	34	0.749	35	0.607
75	88.900	38	0.340	36	0.749	40	0.587
80	88.570	40	0.340	38	0.749	45	0.569
85	88.240	42	0.340	40	0.749	50	0.552
90	87.910	44	0.340	42	0.749	55	0.535
95	87.589	46	0.340	44	0.749	60	0.519
100	87.270	48	0.340	46	0.749	65	0.504
105	86.950	50	0.340	48	0.749	70	0.490
110	86.639	52	0.340	50	0.749	75	0.476
115	86.330	54	0.340	52	0.749	80	0.463
120	86.020	56	0.340	54	0.749	85	0.451
125	85.709	58	0.340	56	0.749	90	0.439
130	85.410	60	0.340	58	0.749	95	0.428
		62	0.340	60	0.749		
		64	0.340	62	0.749		
		66	0.340	64	0.749		
		68	0.340	66	0.749		
		70	0.340	68	0.749		
		72	0.340	70	0.749		
		74	0.340	72	0.749		
		76	0.340	74	0.749		
		78	0.340	76	0.749		
		80	0.340	78	0.749		
		82	0.340	80	0.749		
		84	0.340	82	0.749		

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
	I	55	1.821	55	0.03988	100	0.158
	N	60	2.055	60	0.04457	120	0.162
	S	65	2.313	65	0.04970	140	0.166
	O	70	2.599	70	0.05530	160	0.169
	L	75	2.913	75	0.06141	180	0.173
	U	80	3.258	80	0.06805	200	0.177
	B	85	3.637	85	0.07526	220	0.180
	L	90	4.051	90	0.08308	240	0.183
	E	95	4.504	95	0.09153	260	0.187
		100	4.998	100	0.10070	280	0.190
		105	5.537	105	0.11050	300	0.194
		110	6.122	110	0.12110	320	0.197
		115	6.757	115	0.13250	340	0.200
		120	7.445	120	0.14480	360	0.203
		125	8.190	125	0.15790	380	0.206
		130	8.995	130	0.17190	400	0.209
		135	9.864	135	0.18700	420	0.212
		140	10.800	140	0.20300	440	0.215