

ISOBUTYLAMINE

IAM

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 1-Amino-2-methylpropane iso-Butylamine Monoisobutylamine	Liquid Colorless Strong ammonia odor	Floats and mixes with water.
<p>Evacuate. Keep people away. Shut off ignition sources. Call fire department. Avoid contact with liquid and vapor. Notify local health and pollution control agencies.</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 and self-contained breathing apparatus. Extinguish with dry chemicals, alcohol foam, or carbon dioxide. 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 coughing, difficult breathing or loss of consciousness. If in eyes, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Will burn skin and eyes. If swallowed will cause nausea or loss of consciousness. 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 and have victim induce vomiting.</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

Dilute and disperse
Stop discharge

2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: 7; Aliphatic amine
- 2.2 Formula: (CH₃)₂CHCH₂NH₂
- 2.3 IMO/UN Designation: 3.2/1214
- 2.4 DOT ID No.: 1214
- 2.5 CAS Registry No.: 78-81-9
- 2.6 NAERG Guide No.: 132
- 2.7 Standard Industrial Trade Classification: 51451

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Self-contained breathing apparatus; butyl rubber gloves; chemical face shield; butyl rubber apron
- 3.2 **Symptoms Following Exposure:** Inhalation causes severe coughing and chest pain due to irritation of air passages; can cause lung edema. Compound is sympathomimetic and is also a cardiac depressant and convulsant; ingestion causes nausea and profuse salivation. Contact with eyes causes severe irritation and edema of the cornea. Contact with skin causes severe irritation.
- 3.3 **Treatment of Exposure:** INHALATION: remove victim to fresh air; if not breathing, give artificial respiration; if breathing is difficult, give oxygen; call a physician. INGESTION: give large amount of water followed by dilute vinegar or lemon juice; keep patient warm. EYES: flush with water for 15 min. SKIN: flush with water.
- 3.4 TLV-TWA: Not listed.
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 3; oral LD₅₀ = 120 mg/kg (rabbit), 250 mg/kg (rat)
- 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 concentrations.
- 3.11 **Liquid or Solid Characteristics:** Severe skin irritant. Causes second- and third-degree burns on short contact and is very injurious to the eyes.
- 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:** 15°F C.C.
- 4.2 **Flammable Limits in Air:** 3.4%-9%
- 4.3 **Fire Extinguishing Agents:** Dry chemical, "alcohol" foam, carbon dioxide
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective.
- 4.5 **Special Hazards of Combustion Products:** Toxic oxides of nitrogen may be formed in fire.
- 4.6 **Behavior in Fire:** Vapor is heavier than air and may travel to a source of ignition and flash back. Containers may explode.
- 4.7 **Auto Ignition Temperature:** 712°F
- 4.8 **Electrical Hazards:** Currently not available
- 4.9 **Burning Rate:** 6.03 mm/min.
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 36.9 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 10.5 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Technical; 99+%
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** Open (flame arrester)
- 7.5 **IMO Pollution Category:** C
- 7.6 **Ship Type:** 2
- 7.7 **Barge Hull Type:** 2

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:**

Category	Classification
Health Hazard (Blue).....	2
Flammability (Red).....	3
Instability (Yellow).....	0
- 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

5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:** Currently not available
- 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

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
- 9.2 **Molecular Weight:** 73.1
- 9.3 **Boiling Point at 1 atm:** 153.3°F = 67.4°C = 340.6°K
- 9.4 **Freezing Point:** -121.9°F = -85.5°C = 187.7°K
- 9.5 **Critical Temperature:** 469.4°F = 243.0°C = 516.2°K
- 9.6 **Critical Pressure:** 620 psia = 42 atm = 4.3 MN/m²
- 9.7 **Specific Gravity:** 0.739 at 20°C (liquid)
- 9.8 **Liquid Surface Tension:** 23.70 dynes/cm = 0.0237 N/m at 20°C
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** 2.5
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.073 at 20°C
- 9.12 **Latent Heat of Vaporization:** 182 Btu/lb = 101 cal/g = 4.23 X 10⁵ J/kg
- 9.13 **Heat of Combustion:** -17,550 Btu/lb = -9,760 cal/g = -408 X 10⁶ J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** -148 Btu/lb = -82 cal/g = 3.4 X 10⁵ J/kg
- 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:** 2.4 psia

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: 2
Human Oral hazard: 2
Human Contact hazard: II
Reduction of amenities: XXX

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
34	47.310	68	0.633		N O T P E R T I N E N T	77	0.550
36	47.240	69	0.633				
38	47.170	70	0.633				
40	47.100	71	0.633				
42	47.030	72	0.633				
44	46.960	73	0.633				
46	46.890	74	0.633				
48	46.820	75	0.633				
50	46.750	76	0.633				
52	46.680	77	0.633				
54	46.620	78	0.633				
56	46.550	79	0.633				
58	46.480	80	0.633				
60	46.410	81	0.633				
62	46.340	82	0.633				
64	46.270	83	0.633				
66	46.200	84	0.633				
68	46.130	85	0.633				
70	46.060						
72	45.990						
74	45.920						
76	45.850						
78	45.780						
80	45.710						
82	45.640						
84	45.580						

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	
M I S C I B L E		0	0.252	0	0.00373	0	0.357	
			10	0.364	10	0.00528	25	0.372
			20	0.516	20	0.00733	50	0.387
			30	0.719	30	0.01000	75	0.402
			40	0.984	40	0.01342	100	0.417
			50	1.327	50	0.01773	125	0.431
			60	1.764	60	0.02312	150	0.445
			70	2.314	70	0.02975	175	0.459
			80	2.998	80	0.03783	200	0.473
			90	3.840	90	0.04757	225	0.486
			100	4.865	100	0.05919	250	0.499
			110	6.101	110	0.07293	275	0.512
			120	7.580	120	0.08905	300	0.525
			130	9.334	130	0.10780	325	0.537
			140	11.400	140	0.12940	350	0.549
			150	13.810	150	0.15430	375	0.561
			160	16.610	160	0.18250	400	0.573
			170	19.840	170	0.21450	425	0.585
			180	23.540	180	0.25060	450	0.596
			190	27.750	190	0.29090	475	0.607
			200	32.530	200	0.33580	500	0.618
						525	0.629	
						550	0.639	
						575	0.650	
						600	0.660	