

ISOPROPYLAMINE

IPP

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 2-Aminopropane Monoisopropylamine iso-Propylamine	Liquid Floats and mixes with water. Flammable, irritating vapor is produced. Boiling point is 91°F.	Colorless 	Strong ammonia odor
Evacuate: Restrict human use; farm use; industrial use. Keep people away. Shut off ignition sources. Call fire department. Stay upwind. Use water spray to "knock down" vapor. Avoid contact with liquid and vapor. Notify local health and pollution control agencies.			
Fire	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. Water may be ineffective on fire. Cool exposed containers with water.		
Exposure	CALL FOR MEDICAL AID. 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. LIQUID Will burn skin and eyes. If swallowed will cause nausea. 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. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.		
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.		

1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 7; Aliphatic amine 2.2 Formula: $(CH_3)_2CHNH_2$ 2.3 IMO/UN Designation: 3.1/1221 2.4 DOT ID No.: 1221 2.5 CAS Registry No.: 75-31-0 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 and apron; chemical face shield or safety goggles 3.2 Symptoms Following Exposure: Inhalation causes nose and throat irritation, severe coughing, and chest pain due to irritation of air passages; can cause lung edema and loss of consciousness. Ingestion causes nausea, salivation and severe irritation of mouth and stomach. Contact with eyes causes severe irritation and possible edema of the cornea. Contact with skin causes severe irritation. 3.3 Treatment of Exposure: INHALATION: remove victim to fresh air; if he is not breathing, give artificial respiration; if breathing is difficult, give oxygen; call a physician. INGESTION: call a physician immediately; encourage the drinking of large quantities of water followed by dilute vinegar, lemon juice, cider, or other weak acids; keep patient warm. EYES: flush with water for 15 min., holding eyelids apart; call physician as soon as possible, preferably an eye specialist. SKIN: flush with water. 3.4 TLV-TWA: 5 ppm 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: 10 ppm 3.7 Toxicity by Ingestion: Grade 2; oral LD ₅₀ = 820 mg/kg (rat), 600 mg/kg (mouse) 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: Causes smarting of the skin and first-degree burns on short exposure; may cause second-degree burns on long exposure. 3.12 Odor Threshold: 5 ppm 3.13IDLH Value: 750 ppm 3.14 OSHA PEL-TWA: 5 ppm. 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 O.C. 4.2 Flammable Limits in Air: 2.3%-12% 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 form in fire. 4.6 Behavior in Fire: Burning isopropylamine is difficult to control because of the ease of reignition of the vapor. Vapors are heavier than air and may travel to a source of ignition and flash back. Containers may explode. 4.7 Auto Ignition Temperature: 756°F 4.8 Electrical Hazards: Currently not available 4.9 Burning Rate: 6.33 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 29.8 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 8.3 (calc.) 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	7. SHIPPING INFORMATION 7.1 Grades of Purity: Technical, 99.0% 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: I 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification: <table border="0"> <tr> <td>Category</td> <td>Classification</td> </tr> <tr> <td>Health Hazard (Blue)</td> <td>3</td> </tr> <tr> <td>Flammability (Red)</td> <td>4</td> </tr> <tr> <td>Instability (Yellow)</td> <td>0</td> </tr> </table>		Category	Classification	Health Hazard (Blue)	3	Flammability (Red)	4	Instability (Yellow)	0
Category	Classification								
Health Hazard (Blue)	3								
Flammability (Red)	4								
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 FWCPC List: Not listed									
9. PHYSICAL & CHEMICAL PROPERTIES									
9.1 Physical State at 15°C and 1 atm: Liquid 9.2 Molecular Weight: 59.11 9.3 Boiling Point at 1 atm: 90.3°F = 32.4°C = 305.6°K 9.4 Freezing Point: -139°F = -95°C = 178°K 9.5 Critical Temperature: 395.6°F = 202°C = 475.2°K 9.6 Critical Pressure: 740 psia = 50 atm = 5.1 MN/m ² 9.7 Specific Gravity: (est.) 0.691 at 20°C (liquid) 9.8 Liquid Surface Tension: 16.8 dynes/cm = 0.0168 N/m at 20°C 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: 2.04 9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available 9.12 Latent Heat of Vaporization: 193 Btu/lb = 107 cal/g = 4.48 X 10 ⁵ J/kg 9.13 Heat of Combustion: -16,940 Btu/lb = -9,420 cal/g = -394 X 10 ⁵ J/kg 9.14 Heat of Decomposition: Not pertinent 9.15 Heat of Solution: -210 Btu/lb = -110 cal/g = -4.8 X 10 ⁵ 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: 18.2 psia									

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
42	43.660	50	0.640	50	0.908	77	0.360
44	43.590	51	0.640	51	0.908		
46	43.520	52	0.640	52	0.908		
48	43.450	53	0.640	53	0.908		
50	43.380	54	0.640	54	0.908		
52	43.310	55	0.640	55	0.908		
54	43.240	56	0.640	56	0.908		
56	43.180	57	0.640	57	0.908		
58	43.110	58	0.640	58	0.908		
60	43.040	59	0.640	59	0.908		
62	42.970	60	0.640	60	0.908		
64	42.900	61	0.640	61	0.908		
66	42.830	62	0.640	62	0.908		
68	42.760	63	0.640	63	0.908		
70	42.690	64	0.640	64	0.908		
72	42.620	65	0.640	65	0.908		
74	42.550	66	0.640	66	0.908		
76	42.480	67	0.640	67	0.908		
78	42.410	68	0.640	68	0.908		
80	42.340	69	0.640	69	0.908		
82	42.270	70	0.640	70	0.908		
84	42.200	71	0.640	71	0.908		
86	42.130	72	0.640	72	0.908		
		73	0.640	73	0.908		
		74	0.640	74	0.908		
		75	0.640	75	0.908		

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	-60		0.187	-60	0.00258	0	0.355
I	50		0.283	-50	0.00380	25	0.370
S	-40		0.418	-40	0.00548	50	0.385
C	-30		0.603	-30	0.00773	75	0.400
I	-20		0.853	-20	0.01068	100	0.414
B	-10		1.184	-10	0.01450	125	0.429
L	0		1.615	0	0.01935	150	0.443
E	10		2.169	10	0.02543	175	0.457
	20		2.870	20	0.03294	200	0.470
	30		3.745	30	0.04212	225	0.484
	40		4.827	40	0.05320	250	0.497
	50		6.148	50	0.06642	275	0.510
	60		7.745	60	0.08207	300	0.522
	70		9.657	70	0.10040	325	0.535
	80		11.930	80	0.12170	350	0.547
	90		14.600	90	0.14620	375	0.559
	100		17.720	100	0.17430	400	0.571
	110		21.330	110	0.20620	425	0.583
	120		25.500	120	0.24220	450	0.594
	130		30.260	130	0.28260	475	0.605
	140		35.680	140	0.32770	500	0.616
						525	0.627
						550	0.637
						575	0.647
						600	0.657