

# ISOPROPYL MERCAPTAN

IPM

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Propane-2-thiol 2-Propanethiol			Liquid	White	Strong Skunk Odor
Floats and mixes with water. Flammable, irritating vapor is produced.					
<p>Evacuate.                      Restrict human use; farm use; industrial use.                      Keep people away.                      Shut off ignition sources. Call fire department.                      Avoid contact with liquid and vapor.                      Stay upwind. Use water spray to "knock down" vapor.                      Notify local health and pollution control agencies.</p>					
<b>Fire</b>	<p><b>FLAMMABLE.</b>                      Irritating gases may be produced when heated.                      Flashback along vapor trail may occur.                      Vapor may explode if ignited in an enclosed area.                      Extinguish with dry chemicals, alcohol foam, or carbon dioxide.                      Water may be ineffective on fire.                      Cool exposed containers with water.</p>				
<b>Exposure</b>	<p><b>CALL FOR MEDICAL AID.</b>  <b>VAPOR</b>                      Irritating to eyes, nose and throat.                      If inhaled will cause 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><b>LIQUID</b>                      Irritating to skin and eyes.                      If swallowed will cause nausea and vomiting.                      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.                      IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>				
<b>Water Pollution</b>	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.				

<b>1. CORRECTIVE RESPONSE ACTIONS</b> Dilute and disperse Stop discharge	<b>2. CHEMICAL DESIGNATIONS</b> 2.1 <b>CG Compatibility Group:</b> Not listed. 2.2 <b>Formula:</b> (CH <sub>3</sub> ) <sub>2</sub> CHSH 2.3 <b>IMQ/UN Designation:</b> Not listed 2.4 <b>DOT ID No.:</b> 2402 2.5 <b>CAS Registry No.:</b> Currently not available 2.6 <b>NAERG Guide No.:</b> 130 2.7 <b>Standard Industrial Trade Classification:</b> 51549
<b>3. HEALTH HAZARDS</b>	
<p>3.1 <b>Personal Protective Equipment:</b> Self-contained breathing apparatus; goggles or face shield; rubber gloves</p> <p>3.2 <b>Symptoms Following Exposure:</b> Inhalation causes loss of sense of smell, muscular weakness, convulsions, respiratory paralysis. Ingestion causes nausea and vomiting. Contact with eyes or skin causes irritation.</p> <p>3.3 <b>Treatment of Exposure:</b> INHALATION: remove victim to fresh air; start artificial respiration and give oxygen if required; observe for signs of pulmonary edema; get medical attention. INGESTION: give large amount of water and induce vomiting. EYES or SKIN: flush with water.</p> <p>3.4 <b>TLV-TWA:</b> Not listed.                      3.5 <b>TLV-STEL:</b> Not listed.                      3.6 <b>TLV-Ceiling:</b> Not listed.                      3.7 <b>Toxicity by Ingestion:</b> Grade 2; oral LD<sub>50</sub> = 1,790 mg/kg (rat)                      3.8 <b>Toxicity by Inhalation:</b> Currently not available.                      3.9 <b>Chronic Toxicity:</b> Currently not available                      3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Currently not available                      3.11 <b>Liquid or Solid Characteristics:</b> Currently not available                      3.12 <b>Odor Threshold:</b> 0.25 ppb                      3.13 <b>IDLH Value:</b> Not listed.                      3.14 <b>OSHA PEL-TWA:</b> Not listed.                      3.15 <b>OSHA PEL-STEL:</b> Not listed.                      3.16 <b>OSHA PEL-Ceiling:</b> Not listed.                      3.17 <b>EPA AEGL:</b> Not listed</p>	

## 4. FIRE HAZARDS

- 4.1 **Flash Point:** -30°F O.C.  
 4.2 **Flammable Limits in Air:** Currently not available  
 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:** Irritating sulfur dioxide gas is formed in fire.  
 4.6 **Behavior in Fire:** Vapor is heavier than air and may travel to a source of ignition  
 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 **Stoichiometric Air to Fuel Ratio:** 28.6 (calc.)  
 4.12 **Flame Temperature:** Currently not available  
 4.13 **Combustion Molar Ratio (Reactant to Product):** 8.0 (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:** 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

## 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: T  
 Damage to living resources: -  
 Human Oral hazard: 1  
 Human Reduction hazard: I  
 Reduction of amenities: XXX

## 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Technical, 98.0+%  
 7.2 **Storage Temperature:** Ambient  
 7.3 **Inert Atmosphere:** No requirement  
 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:** 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:** 76.2  
 9.3 **Boiling Point at 1 atm:** 126.6°F = 52.5°C = 325.8°K  
 9.4 **Freezing Point:** -202.8°F = -130.5°C = 142.7°K  
 9.5 **Critical Temperature:** Currently not available  
 9.6 **Critical Pressure:** Currently not available  
 9.7 **Specific Gravity:** 0.814 at 20°C (liquid)  
 9.8 **Liquid Surface Tension:** 22.0 dynes/cm = 0.022 N/m at 20°C  
 9.9 **Liquid Water Interfacial Tension:** Not pertinent  
 9.10 **Vapor (Gas) Specific Gravity:** 2.6  
 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.0964 at 15.6°C  
 9.12 **Latent Heat of Vaporization:** 165.7 Btu/lb = 92.1 cal/g = 3.83 X 10<sup>5</sup> J/kg  
 9.13 **Heat of Combustion:** -14,920 Btu/lb = -8,290 cal/g = -347 X 10<sup>5</sup> 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
34	51.990	-140	0.387	0	1.048	52	4.059
36	51.920	-130	0.388	5	1.048	54	4.008
38	51.850	-120	0.390	10	1.048	56	3.959
40	51.780	-110	0.392	15	1.048	58	3.911
42	51.710	-100	0.394	20	1.048	60	3.863
44	51.640	-90	0.396	25	1.048	62	3.817
46	51.570	-80	0.398	30	1.048	64	3.771
48	51.510	-70	0.400	35	1.048	66	3.727
50	51.440	-60	0.402	40	1.048	68	3.683
52	51.370	-50	0.404	45	1.048	70	3.640
54	51.300	-40	0.406	50	1.048	72	3.598
56	51.230	-30	0.408	55	1.048	74	3.556
58	51.160	-20	0.410	60	1.048	76	3.516
60	51.090	-10	0.412	65	1.048	78	3.476
62	51.020	0	0.414			80	3.437
64	50.950	10	0.416			82	3.398
66	50.880	20	0.418			84	3.361
68	50.810	30	0.420			86	3.324
70	50.740	40	0.422			88	3.288
72	50.670	50	0.423			90	3.252
74	50.600	60	0.425			92	3.217
76	50.530	70	0.427			94	3.183
78	50.460	80	0.429				
80	50.400	90	0.431				
82	50.330	100	0.433				
84	50.260	110	0.435				

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	45	2.446	45	0.03441	100	0.311
	I	50	2.775	50	0.03865	120	0.318
	S	55	3.140	55	0.04331	140	0.325
	C	60	3.545	60	0.04842	160	0.333
	I	65	3.993	65	0.05402	180	0.340
	B	70	4.487	70	0.06013	200	0.347
	L	75	5.031	75	0.06680	220	0.354
	E	80	5.629	80	0.07405	240	0.362
		85	6.286	85	0.08192	260	0.369
		90	7.005	90	0.09046	280	0.376
		95	7.791	95	0.09971	300	0.384
		100	8.649	100	0.10970	320	0.391
		105	9.583	105	0.12050	340	0.398
		110	10.600	110	0.13210	360	0.405
		115	11.700	115	0.14460	380	0.413
		120	12.900	120	0.15800	400	0.420
		125	14.190	125	0.17230	420	0.427
						440	0.435