

N-PROPYL ALCOHOL

PAL

CAUTIONARY RESPONSE INFORMATION			
Common Synonyms Ethylcarbinol 1-Propanol Propyl alcohol	Liquid	Colorless	Alcohol odor
Mixes with water. Flammable, irritating vapor is produced.			
	<p>Keep people away. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Avoid contact with liquid and vapor. Notify local health and pollution control agencies. Protect water intakes.</p>		
Fire	<p>FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>		
Exposure	<p>CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose, and throat. If inhaled, will cause nausea, dizziness, or headache. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Will burn eyes. Harmful if swallowed. 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>Dangerous to aquatic life in high concentrations. 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 Chemical and Physical Treatment: Burn	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 20; Alcohol, glycol 2.2 Formula: CH ₃ CH ₂ CH ₂ OH 2.3 IMO/UN Designation: 3.2/1274 2.4 DOT ID No.: 1274 2.5 CAS Registry No.: 71-23-8 2.6 NAERG Guide No.: 129 2.7 Standard Industrial Trade Classification: 51212
3. HEALTH HAZARDS	
<p>3.1 Personal Protective Equipment: Air-supplied respirator for high concentrations; goggles or face shield; plastic gloves.</p> <p>3.2 Symptoms Following Exposure: Contact with eyes is extremely irritating and may cause burns. Vapors irritate nose and throat. In high concentrations, may cause nausea, dizziness, headache, and stupor.</p> <p>3.3 Treatment of Exposure: INHALATION: remove victim to fresh air; call a physician. SKIN OR EYE CONTACT: flush at once with plenty of water; get medical care for eyes.</p> <p>3.4 TLV-TWA: 200 ppm</p> <p>3.5 TLV-STEL: 250 ppm</p> <p>3.6 TLV-Ceiling: Not listed.</p> <p>3.7 Toxicity by Ingestion: Grade 2; LD₅₀ = 0.5 to 5 g/kg (rat)</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: None.</p> <p>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.</p> <p>3.11 Liquid or Solid Characteristics: No appreciable hazard. Practically harmless to the skin.</p> <p>3.12 Odor Threshold: 30 ppm</p> <p>3.13 IDLH Value: 800 ppm.</p> <p>3.14 OSHA PEL-TWA: 200 ppm.</p> <p>3.15 OSHA PEL-STEL: Not listed.</p> <p>3.16 OSHA PEL-Ceiling: Not listed.</p> <p>3.17 EPA AEGL: Not listed</p>	

4. FIRE HAZARDS		7. SHIPPING INFORMATION
4.1 Flash Point: 81°F O.C. 77°F C.C.	7.1 Grades of Purity: 99.8+%	
4.2 Flammable Limits in Air: 2.1%-13.5%	7.2 Storage Temperature: Ambient	
4.3 Fire Extinguishing Agents: Carbon dioxide or dry chemical for small fires; alcohol foam for large fires.	7.3 Inert Atmosphere: No requirement	
4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective	7.4 Venting: Open (flame arrester)	
4.5 Special Hazards of Combustion Products: Not pertinent	7.5 IMO Pollution Category: Currently not available	
4.6 Behavior in Fire: Not pertinent	7.6 Ship Type: Currently not available	
4.7 Auto Ignition Temperature: 700°F	7.7 Barge Hull Type: Currently not available	
4.8 Electrical Hazards: Class I, Group D	8. HAZARD CLASSIFICATIONS	
4.9 Burning Rate: 2.9 mm/min.	8.1 49 CFR Category: Flammable liquid	
4.10 Adiabatic Flame Temperature: Currently not available	8.2 49 CFR Class: 3	
4.11 Stoichiometric Air to Fuel Ratio: 21.4 (calc.)	8.3 49 CFR Package Group: III	
4.12 Flame Temperature: Currently not available	8.4 Marine Pollutant: No	
4.13 Combustion Molar Ratio (Reactant to Product): 7.0 (calc.)	8.5 NFPA Hazard Classification:	
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	Category Classification Health Hazard (Blue)..... 1 Flammability (Red)..... 3 Instability (Yellow)..... 0	
5. CHEMICAL REACTIVITY		
5.1 Reactivity with Water: No reaction	8.6 EPA Reportable Quantity: Not listed.	
5.2 Reactivity with Common Materials: No reaction	8.7 EPA Pollution Category: Not listed.	
5.3 Stability During Transport: Stable	8.8 RCRA Waste Number: Not listed	
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent	8.9 EPA FWCNA List: Not listed	
5.5 Polymerization: Not pertinent	9. PHYSICAL & CHEMICAL PROPERTIES	
5.6 Inhibitor of Polymerization: Not pertinent	9.1 Physical State at 15°C and 1 atm: Liquid	
6. WATER POLLUTION	9.2 Molecular Weight: 60.10	
6.1 Aquatic Toxicity: 500 ppm/24 hr/goldfish/died/fresh water	9.3 Boiling Point at 1 atm: 207.0°F = 97.2°C = 370.4°K	
6.2 Waterfowl Toxicity: Currently not available	9.4 Freezing Point: -195.2°F = -126.2°C = 147.0°K	
6.3 Biological Oxygen Demand (BOD): 0.47-1.5 lb/lb, 5 days	9.5 Critical Temperature: 506.5°F = 263.6°C = 536.8°K	
6.4 Food Chain Concentration Potential: None	9.6 Critical Pressure: 750 psia = 51 atm = 5.2 MN/m ²	
6.5 GESAMP Hazard Profile: Not listed	9.7 Specific Gravity: 0.803 at 20°C (liquid)	
NOTES	9.8 Liquid Surface Tension: Not pertinent	
	9.9 Liquid Water Interfacial Tension: Not pertinent	
	9.10 Vapor (Gas) Specific Gravity: 2.1	
	9.11 Ratio of Specific Heats of Vapor (Gas): 1.107	
	9.12 Latent Heat of Vaporization: 292.7 Btu/lb = 162.6 cal/g = 6.808 X 10 ⁵ J/kg	
	9.13 Heat of Combustion: -13,130 Btu/lb = -7296 cal/g = -305.5 X 10 ⁵ J/kg	
	9.14 Heat of Decomposition: Not pertinent	
	9.15 Heat of Solution: (est.) -9 Btu/lb = -5 cal/g = -0.2 X 10 ⁵ J/kg	
	9.16 Heat of Polymerization: Not pertinent	
	9.17 Heat of Fusion: 20.66 cal/g	
	9.18 Limiting Value: Currently not available	
	9.19 Reid Vapor Pressure: 0.87 psia	

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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
35	51.100	20	0.505		N		N
40	50.960	30	0.517		O		O
45	50.820	40	0.530		T		T
50	50.670	50	0.542				
55	50.530	60	0.554		P		P
60	50.390	70	0.566		E		E
65	50.250	80	0.579		R		R
70	50.110	90	0.591		I		I
75	49.960	100	0.603		N		N
80	49.820	110	0.615		E		E
85	49.680	120	0.627		N		N
90	49.540	130	0.640		E		E
95	49.400	140	0.652		N		N
100	49.250	150	0.664		E		E
105	49.110	160	0.676		N		N
110	48.970	170	0.689		E		E
115	48.830				N		N
120	48.680				O		O
125	48.540				T		T
130	48.400						
135	48.260				P		P
140	48.120				E		E
					R		R
					I		I
					N		N
					E		E
					N		N
					E		E
					N		N
					O		O
					T		T

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	0	0	0.014	0	0.00017	0	0.310
I	5	5	0.017	5	0.00021	25	0.322
S	10	10	0.022	10	0.00026	50	0.333
C	15	15	0.028	15	0.00033	75	0.345
I	20	20	0.035	20	0.00041	100	0.357
B	25	25	0.043	25	0.00050	125	0.369
L	30	30	0.054	30	0.00061	150	0.380
E	35	35	0.066	35	0.00075	175	0.392
	40	40	0.082	40	0.00091	200	0.403
	45	45	0.100	45	0.00111	225	0.414
	50	50	0.122	50	0.00134	250	0.426
	55	55	0.148	55	0.00161	275	0.437
	60	60	0.179	60	0.00193	300	0.448
	65	65	0.216	65	0.00231	325	0.459
	70	70	0.260	70	0.00275	350	0.469
	75	75	0.311	75	0.00326	375	0.480
	80	80	0.372	80	0.00386	400	0.491
	85	85	0.442	85	0.00455	425	0.501
	90	90	0.525	90	0.00535	450	0.512
	95	95	0.621	95	0.00627	475	0.522
	100	100	0.732	100	0.00732	500	0.532
	105	105	0.861	105	0.00853	525	0.542
	110	110	1.009	110	0.00992	550	0.552
	115	115	1.180	115	0.01149	575	0.562
	120	120	1.376	120	0.01329	600	0.572
	125	125	1.600	125	0.01532		