

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.
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.		
Fire	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.	
Exposure	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.	
Water Pollution	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.	

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 3.1 Personal Protective Equipment: Air-supplied respirator for high concentrations; goggles or face shield; plastic gloves. 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. 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. 3.4 TLV-TWA: 200 ppm 3.5 TLV-STEL: 250 ppm 3.6 TLV-Ceiling: Not listed. 3.7 Toxicity by Ingestion: Grade 2; LD ₅₀ = 0.5 to 5 g/kg (rat) 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: None 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. 3.11 Liquid or Solid Characteristics: No appreciable hazard. Practically harmless to the skin. 3.12 Odor Threshold: 30 ppm 3.13 IDLH Value: 800 ppm. 3.14 OSHA PEL-TWA: 200 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:** 81°F O.C. 77°F C.C.
- 4.2 **Flammable Limits in Air:** 2.1%-13.5%
- 4.3 **Fire Extinguishing Agents:** Carbon dioxide or dry chemical for small fires; alcohol foam for large fires.
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective
- 4.5 **Special Hazards of Combustion Products:** Not pertinent
- 4.6 **Behavior in Fire:** Not pertinent
- 4.7 **Auto Ignition Temperature:** 700°F
- 4.8 **Electrical Hazards:** Class I, Group D
- 4.9 **Burning Rate:** 2.9 mm/min.
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 21.4 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 7.0 (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:** No reaction
- 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:** 500 ppm/24 hr/goldfish/died/fresh water
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** 0.47-1.5 lb/lb, 5 days
- 6.4 **Food Chain Concentration Potential:** None
- 6.5 **GESAMP Hazard Profile:** Not listed

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99.8+%
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** No requirement
- 7.4 **Venting:** Open (flame arrester)
- 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:** III
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue).....	1
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

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
- 9.2 **Molecular Weight:** 60.10
- 9.3 **Boiling Point at 1 atm:** 207.0°F = 97.2°C = 370.4°K
- 9.4 **Freezing Point:** -195.2°F = -126.2°C = 147.0°K
- 9.5 **Critical Temperature:** 506.5°F = 263.6°C = 536.8°K
- 9.6 **Critical Pressure:** 750 psia = 51 atm = 5.2 MN/m²
- 9.7 **Specific Gravity:** 0.803 at 20°C (liquid)
- 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 10⁵ J/kg
- 9.13 **Heat of Combustion:** -13,130 Btu/lb = -7296 cal/g = -305.5 X 10³ J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** (est.) -9 Btu/lb = -5 cal/g = -0.2 X 10⁵ 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

NOTES

N-PROPYL ALCOHOL

PAL

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		T		T
75	49.960	100	0.603		I		I
80	49.820	110	0.615		N		N
85	49.680	120	0.627		E		E
90	49.540	130	0.640		N		N
95	49.400	140	0.652		T		T
100	49.250	150	0.664				
105	49.110	160	0.676				
110	48.970	170	0.689				
115	48.830						
120	48.680						
125	48.540						
130	48.400						
135	48.260						
140	48.120						

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