

# DI-N-PROPYLAMINE

DNA

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION								
Common Synonyms N-Propyl-1-propanamine	Liquid	Colorless	Strong ammonia-like odor  Floats and mixes with water.	4.1 Flash Point: 45°F O.C. 4.2 Flammable Limits in Air: Currently not available 4.3 Fire Extinguishing Agents: Foam, dry chemical, 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 fires. 4.6 Behavior in Fire: Currently not available 4.7 Auto Ignition Temperature: Currently not available 4.8 Electrical Hazards: Currently not available 4.9 Burning Rate: 6.1 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 51.2 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 14.5 (calc.) 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	7.1 Grades of Purity: Technical, 98%; Pure, 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: 3 7.7 Barge Hull Type: 2								
Keep people away. Avoid contact with liquid and vapor. Avoid inhalation. Shut off ignition sources. Call fire department. Stay upwind. Use water spray to "knock down" vapor. Notify local health and pollution control agencies.				8. HAZARD CLASSIFICATIONS									
<b>Fire</b>  FLAMMABLE POISONOUS GASES MAY BE PRODUCED IN FIRE. Containers may explode 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, foam or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.				8.1 49 CFR Category: Not listed 8.2 49 CFR Class: Not pertinent 8.3 49 CFR Package Group: Not listed. 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification: <table><tr><td>Category</td><td>Classification</td></tr><tr><td>Health Hazard (Blue).....</td><td>3</td></tr><tr><td>Flammability (Red).....</td><td>3</td></tr><tr><td>Instability (Yellow).....</td><td>0</td></tr></table>		Category	Classification	Health Hazard (Blue).....	3	Flammability (Red).....	3	Instability (Yellow).....	0
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<b>Exposure</b>  CALL FOR MEDICAL AID.  VAPOR Irritating to eyes, nose and throat. If inhaled will cause headache, dizziness, coughing, or difficult breathing. 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 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. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.				8.6 EPA Reportable Quantity: 5000 pounds 8.7 EPA Pollution Category: D 8.8 RCRA Waste Number: U110 8.9 EPA FWCPC List: Not listed									
<b>Water Pollution</b>  Effect of low concentrations on aquatic life is unknown. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.				9. PHYSICAL & CHEMICAL PROPERTIES									

1. CORRECTIVE RESPONSE ACTIONS	2. CHEMICAL DESIGNATIONS
Dilute and disperse Stop discharge Do not burn	2.1 CG Compatibility Group: 7; Aliphatic amine 2.2 Formula: (CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> ) <sub>2</sub> NH 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 2383 2.5 CAS Registry No.: 142-84-7 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; butyl rubber apron; face shield	
3.2 Symptoms Following Exposure: Inhalation causes severe coughing and chest pain due to irritation of air passages; can cause lung edema; may also cause headache, nausea, faintness, and anxiety. Ingestion causes irritation and burning of mouth and stomach. 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 he is not breathing, give artificial respiration; if breathing is difficult, give oxygen; call a physician. INGESTION: give large amount of water; get medical attention. EYES: flush with water for 15 min.; get medical attention for burns. SKIN: flush with water for 15 min.	
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 rat LD <sub>50</sub> = 200 mg/kg (rat), 800 mg/kg (mouse) 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Causes degenerative changes in liver and kidneys of rats and rabbits 3.10 Vapor (Gas) Irritant Characteristics: Currently not available 3.11 Liquid or Solid Characteristics: Currently not available 3.12 Odor Threshold: Currently not available 3.13IDLH 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	5. CHEMICAL REACTIVITY	6. WATER POLLUTION	7. SHIPPING INFORMATION								
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9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: 101.19 9.3 Boiling Point at 1 atm: 228.7°F = 109.3°C = 382.5°K 9.4 Freezing Point: -81°F = -63°C = 210°K 9.5 Critical Temperature: 530.6°F = 277°C = 550.2°K 9.6 Critical Pressure: 456 psia = 31.0 atm = 3.14 MN/m <sup>2</sup> 9.7 Specific Gravity: 0.738 at 20°C (liquid) 9.8 Liquid Surface Tension: 6.58 dynes/cm = 0.00658 N/m at 20°C 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: 3.5 9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available 9.12 Latent Heat of Vaporization: 143 Btu/lb = 79.5 cal/g 3.33 X 10 <sup>5</sup> J/kg 9.13 Heat of Combustion: -18,750 Btu/lb = -10,420 cal/g = -436.0 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		9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: 101.19 9.3 Boiling Point at 1 atm: 228.7°F = 109.3°C = 382.5°K 9.4 Freezing Point: -81°F = -63°C = 210°K 9.5 Critical Temperature: 530.6°F = 277°C = 550.2°K 9.6 Critical Pressure: 456 psia = 31.0 atm = 3.14 MN/m <sup>2</sup> 9.7 Specific Gravity: 0.738 at 20°C (liquid) 9.8 Liquid Surface Tension: 6.58 dynes/cm = 0.00658 N/m at 20°C 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: 3.5 9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available 9.12 Latent Heat of Vaporization: 143 Btu/lb = 79.5 cal/g 3.33 X 10 <sup>5</sup> J/kg 9.13 Heat of Combustion: -18,750 Btu/lb = -10,420 cal/g = -436.0 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	47.010	52	0.600		N	60	0.569
36	46.960	54	0.600		O	70	0.528
38	46.900	56	0.600		T	80	0.490
40	46.840	58	0.600			90	0.457
42	46.790	60	0.600		P	100	0.427
44	46.730	62	0.600		E	110	0.400
46	46.680	64	0.600		R	120	0.375
48	46.620	66	0.600		T	130	0.353
50	46.570	68	0.600		I	140	0.332
52	46.510	70	0.600		N	150	0.314
54	46.460	72	0.600		E	160	0.297
56	46.400	74	0.600		N	170	0.281
58	46.340	76	0.600		T	180	0.267
60	46.290	78	0.600			190	0.254
62	46.230	80	0.600			200	0.242
64	46.180	82	0.600			210	0.231
66	46.120	84	0.600				
68	46.070	86	0.600				
70	46.010	88	0.600				
72	45.960	90	0.600				
74	45.900	92	0.600				
76	45.850	94	0.600				
78	45.790	96	0.600				
80	45.730	98	0.600				
82	45.680	100	0.600				
84	45.620	102	0.600				

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
68	2.500	55	0.270	55	0.00494	0	0.345
		60	0.317	60	0.00575	25	0.360
		65	0.371	65	0.00667	50	0.375
		70	0.433	70	0.00771	75	0.390
		75	0.504	75	0.00889	100	0.405
		80	0.584	80	0.01021	125	0.419
		85	0.675	85	0.01168	150	0.433
		90	0.777	90	0.01332	175	0.447
		95	0.892	95	0.01515	200	0.460
		100	1.020	100	0.01718	225	0.474
		105	1.164	105	0.01943	250	0.487
		110	1.324	110	0.02191	275	0.499
		115	1.502	115	0.02464	300	0.512
		120	1.699	120	0.02763	325	0.524
		125	1.918	125	0.03092	350	0.537
		130	2.159	130	0.03451	375	0.549
		135	2.424	135	0.03843	400	0.560
		140	2.716	140	0.04269	425	0.572
						450	0.583
						475	0.594
						500	0.605
						525	0.616
						550	0.626
						575	0.636
						600	0.646