

1-PENTENE

PTE

CAUTIONARY RESPONSE INFORMATION

Common Synonyms alpha-n-Amylene Propylethylene	Liquid Colorless Gasoline odor
Floats on water. Flammable vapor is produced. Boiling point is 86°F.	
<p>Evacuate. Keep people away. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Avoid contact with vapor. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	<p>FLAMMABLE. Flashback along vapor trail may occur. Containers may explode when heated. Vapor may explode if ignited in an enclosed area. Extinguish with dry chemical, foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR If inhaled, will cause dizziness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Harmful if swallowed. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.</p>
Water Pollution	<p>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.</p>

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Contain
Collection Systems: Skim
Chemical and Physical Treatment: Burn
Salvage waterfowl

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 30; Olefin
2.2 Formula: $CH_2(CH_2)_3CH=CH_2$
2.3 IMO/UN Designation: 3.1/1108
2.4 DOT ID No.: 1108
2.5 CAS Registry No.: Currently not available
2.6 NAERG Guide No.: 127
2.7 Standard Industrial Trade Classification: 51119

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Goggles or face shield (as for gasoline).
3.2 Symptoms Following Exposure: Acts as a simple asphyxiant or weak anesthetic in high vapor concentrations. Similar to effects caused by gasoline vapors.
3.3 Treatment of Exposure: INHALATION: remove victim from exposure. SKIN: wash with soap and water. EYES: flush with water.
3.4 TLV-TWA: Not listed.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Currently not available
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Currently not available
3.10 Vapor (Gas) Irritant Characteristics: Not irritating
3.11 Liquid or Solid Characteristics: Not irritating
3.12 Odor Threshold: Currently not available
3.13 IDLH 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

4.1 Flash Point: -60°F C.C.; 0°F O.C.
4.2 Flammable Limits in Air: 1.4%-8.7%
4.3 Fire Extinguishing Agents: Foam, dry chemical, or carbon dioxide. Stop flow of vapor.
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: Containers may explode in fire.
4.7 Auto Ignition Temperature: 527°F
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: 9.1 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichiometric Air to Fuel Ratio: 35.7 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 10.0 (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: 655 ppm/1 hr/sunfish/lethal/fresh water
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): 0.8% (theor.), 0.5 day; 0.5% (theor.), 1 day
6.4 Food Chain Concentration Potential: None
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: (2)
Human Oral hazard: (1)
Human Contact hazard: 0
Reduction of amenities: 0

7. SHIPPING INFORMATION

7.1 Grades of Purity: Research: 99.9%; pure: 99.4%; technical: 97.0%
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: No requirement
7.4 Venting: Open (flame arrester) or pressure-vacuum
7.5 IMO Pollution Category: C
7.6 Ship Type: 3
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: I
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	2
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 FWPCA List: Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Liquid
9.2 Molecular Weight: 70.13
9.3 Boiling Point at 1 atm: 85.8°F = 29.9°C = 303.1°K
9.4 Freezing Point: -265°F = -165°C = 108°K
9.5 Critical Temperature: 376.9°F = 191.6°C = 464.8°K
9.6 Critical Pressure: 588 psia = 40 atm = 4.05 MN/m²
9.7 Specific Gravity: 0.641 at 20°C (liquid)
9.8 Liquid Surface Tension: 16.5 dynes/cm = 0.0165 N/m at 20°C
9.9 Liquid Water Interfacial Tension: (est.) 50 dynes/cm = 0.05 N/m at 20°C
9.10 Vapor (Gas) Specific Gravity: 2.4
9.11 Ratio of Specific Heats of Vapor (Gas): 1.083
9.12 Latent Heat of Vaporization: 154.6 Btu/lb = 85.87 cal/g = 3.595 X 10⁵ J/kg
9.13 Heat of Combustion: -19,359 Btu/lb = -10,755 cal/g = -450.29 X 10⁵ 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
15	41.850	0	0.493	15	0.943	-35	0.356
20	41.680	10	0.498	20	0.934	-30	0.344
25	41.500	20	0.502	25	0.924	-25	0.332
30	41.330	30	0.507	30	0.915	-20	0.322
35	41.160	40	0.512	35	0.905	-15	0.311
40	40.980	50	0.516	40	0.896	-10	0.302
45	40.810	60	0.521	45	0.887	-5	0.293
50	40.640	70	0.525	50	0.877	0	0.284
55	40.460	80	0.530	55	0.868	5	0.276
60	40.290			60	0.858	10	0.268
65	40.120			65	0.849	15	0.260
70	39.940			70	0.840	20	0.253
75	39.770			75	0.830	25	0.246
				80	0.821	30	0.240
				85	0.811	35	0.234
						40	0.228
						45	0.222
						50	0.217
						55	0.212
						60	0.207
						65	0.202

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
	I	-70	0.167	-70	0.00280	0	0.330
	N	-60	0.253	-60	0.00414	25	0.344
	S	-50	0.374	-50	0.00596	50	0.358
	O	-40	0.540	-40	0.00841	75	0.372
	L	-30	0.764	-30	0.01162	100	0.386
	U	-20	1.061	-20	0.01577	125	0.400
	B	-10	1.448	-10	0.02104	150	0.413
	L	0	1.945	0	0.02764	175	0.427
	E	10	2.573	10	0.03579	200	0.440
		20	3.359	20	0.04574	225	0.453
		30	4.328	30	0.05774	250	0.466
		40	5.512	40	0.07206	275	0.479
		50	6.942	50	0.08898	300	0.491
		60	8.654	60	0.10880	325	0.504
		70	10.680	70	0.13180	350	0.516
		80	13.070	80	0.15830	375	0.528
		90	15.860	90	0.18850	400	0.540
		100	19.090	100	0.22290	425	0.551
		110	22.820	110	0.26160	450	0.563
		120	27.070	120	0.30510	475	0.574
		130	31.910	130	0.35350	500	0.585
		140	37.370	140	0.40720	525	0.596
		150	43.520	150	0.46640	550	0.607
		160	50.400	160	0.53140	575	0.618
		170	58.060	170	0.60240	600	0.628