

# 1,3-PENTADIENE

PDE

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> alpha-Methylvinyl 1-Methylbutadiene cis-Pentadiene-1,3 trans-Pentadiene-1,3 Piperylene		Liquid	Colorless
		Floats on water.	
<p><b>KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID AND VAPOR.</b>                  Wear self-contained positive pressure breathing apparatus and full protective clothing.                  Shut off ignition sources and call fire department.                  Stay upwind and use water spray to "knock down" vapor.                  Notify local health and pollution control agencies.                  Protect water intakes.</p>			
<b>Fire</b>	<p><b>FLAMMABLE.</b>                  Flashback along vapor trail may occur.                  Containers may explode in fire.                  Water may be ineffective on fire.                  Combat fires from behind barrier or protected location.                  Extinguish small fires: dry chemical, CO<sub>2</sub>, water spray, or foam;                  large fires: water spray, fog or foam.                  Wear self-contained positive pressure breathing apparatus and full protective clothing.                  Move container from fire area if you can do it without risk.                  Cool exposed containers with water.</p>		
<b>Exposure</b>	<p>CALL FOR MEDICAL AID.</p> <p><b>VAPOR</b>                  May cause dizziness or suffocation.                  May irritate eyes and skin.                  Move to fresh air.                  If breathing has stopped, give artificial respiration.                  If breathing is difficult, give oxygen.</p> <p><b>LIQUID</b>                  May irritate skin and eyes.                  IF IN EYES OR ON SKIN, flush with running water for at least 15 minutes; hold eyelids open if necessary.                  Wash skin with soap and water.                  Remove and isolate contaminated clothing and shoes at the site.</p>		
<b>Water Pollution</b>	<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

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

### 2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** 30; Olefins  
 2.2 **Formula:** CH<sub>2</sub>=CHCH=CHCH<sub>3</sub>  
 2.3 **IMO/UN Designation:** Not listed  
 2.4 **DOT ID No.:** Not listed  
 2.5 **CAS Registry No.:** 504-60-9  
 2.6 **NAERG Guide No.:** Not listed  
 2.7 **Standard Industrial Trade Classification:** 51119

### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Wear self-contained positive pressure breathing apparatus and full protective clothing.
- 3.2 **Symptoms Following Exposure:** Vapors may cause dizziness or suffocation; contact may irritate skin and eyes.
- 3.3 **Treatment of Exposure:** INHALATION: Move victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. EYES OR SKIN: Flush immediately with running for at least 15 minutes; hold eyelids open if necessary. Wash skin with soap and water. Remove and isolate contaminated clothing and shoes at the site. If swallowed and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.
- 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:** May irritate eyes and mucous membranes.  
 3.11 **Liquid or Solid Characteristics:** Liquid may cause irritation of the eyes and skin.  
 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:**  
 -20°F C.C.
- 4.2 **Flammable Limits in Air:** 2% - 8.3%
- 4.3 **Fire Extinguishing Agents:** Small fires: Dry chemical, carbon dioxide, water spray, fog or foam; large fires: Water spray, fog or foam.
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective; material floats on surface.
- 4.5 **Special Hazards of Combustion Products:** Fire produces irritating and poisonous gases.
- 4.6 **Behavior in Fire:** Will burn and produce irritating and poisonous gases. Container may explode in heat of fire. Vapor explosion hazard indoors, outdoors, or in sewers. Runoff to sewer may create fire or explosion hazard.
- 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:** 33.3 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 9.0 (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:** Currently not available
- 5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
- 5.5 **Polymerization:** Currently not available
- 5.6 **Inhibitor of Polymerization:** 2,6-Ditertiarybutyl-4-methylphenol

### 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**  
 100-1000 ppm/96 hr/TLm
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):**  
 Currently not available
- 6.4 **Food Chain Concentration Potential:**  
 Currently not available
- 6.5 **GESAMP Hazard Profile:**  
 Bioaccumulation: 0  
 Damage to living resources: 2  
 Human Oral hazard: -  
 Human Contact hazard: -  
 Reduction of amenities: -

### 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 90%
- 7.2 **Storage Temperature:** Currently not available
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Currently not available
- 7.5 **IMO Pollution Category:** C
- 7.6 **Ship Type:** 3
- 7.7 **Barge Hull Type:** 3

### 8. HAZARD CLASSIFICATIONS

- 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:**
- | Category                  | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 2              |
| Flammability (Red).....   | 4              |
| Instability (Yellow)..... | 2              |
- 8.6 **EPA Reportable Quantity:** 100 pounds
- 8.7 **EPA Pollution Category:** B
- 8.8 **RCRA Waste Number:** U186
- 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:** 68.12
- 9.3 **Boiling Point at 1 atm:** -45°F = -42.8°C = 230.2°K
- 9.4 **Freezing Point:** -222°F = -141°C = 132°K
- 9.5 **Critical Temperature:** 411°F = 211°C = 484°K (est.)
- 9.6 **Critical Pressure:** 542 psia = 37 atm = 3.7 MN/m<sup>2</sup> (est.)
- 9.7 **Specific Gravity:** 0.6834 at 20°C (average value for cis and trans isomers)
- 9.8 **Liquid Surface Tension:** Currently not available
- 9.9 **Liquid Water Interfacial Tension:** Currently not available
- 9.10 **Vapor (Gas) Specific Gravity:** 2.4 (est.)
- 9.11 **Ratio of Specific Heats of Vapor (Gas):**  
 Currently not available
- 9.12 **Latent Heat of Vaporization:** 193 Btu/lb = 107 cal/g = 4.50 X 10<sup>5</sup> J/kg
- 9.13 **Heat of Combustion:** -20,167 Btu/lb = -11,207 cal/g = -46.9 x 10<sup>6</sup> J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** Not pertinent
- 9.16 **Heat of Polymerization:** Currently not available
- 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
68	42.660		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E

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 N S O L U B I L E	-75 -50 -25 0 25 50 75	0.075 0.165 0.363 0.798 1.758 3.872 8.256	-75 -50 -25 0 25 50 75	0.00123 0.00257 0.00535 0.01114 0.02321 0.04834 0.10068		C U R R E N T L Y  N O T  A V A I L A B L E