

# 1,4-PENTADIENE

PDN

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Allylethylene divinylmethane Penta-1,4-diene		Liquid Colorless  Floats on water.
<p><b>KEEP PEOPLE AWAY. AVOID CONTACT WITH LIQUID.</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.  Wear self-contained positive pressure breathing apparatus and full protective clothing.  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.  Water may be ineffective on fire.  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.  IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>	
<b>Water Pollution</b>	<p>Effect of low concentration 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>	

<p><b>1. CORRECTIVE RESPONSE ACTIONS</b>  Stop discharge  Contain  Collection Systems: Skim  Chemical and Physical Treatment: Burn</p>	<p><b>2. CHEMICAL DESIGNATIONS</b>  2.1 <b>CG Compatibility Group:</b> Not listed.  2.2 <b>Formula:</b> H<sub>2</sub>C=CHCH=CH<sub>2</sub>  2.3 <b>IMO/UN Designation:</b> Not listed  2.4 <b>DOT ID No.:</b> Not listed  2.5 <b>CAS Registry No.:</b> 591-93-5  2.6 <b>NAERG Guide No.:</b> Not listed  2.7 <b>Standard Industrial Trade Classification:</b> 51119</p>
<p><b>3. HEALTH HAZARDS</b></p> <p>3.1 <b>Personal Protective Equipment:</b> Wear self-contained positive pressure breathing apparatus and full protective clothing.  3.2 <b>Symptoms Following Exposure:</b> Vapor may cause dizziness or suffocation. Contact may irritate skin and eyes.  3.3 <b>Treatment of Exposure:</b> 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 water for at least 15 minutes. Remove and isolate contaminated clothing and shoes at the site.  3.4 <b>TLV-TWA:</b> Not listed.  3.5 <b>TLV-STEL:</b> Not listed.  3.6 <b>TLV-Ceiling:</b> Not listed.  3.7 <b>Toxicity by Ingestion:</b> Currently not available  3.8 <b>Toxicity by Inhalation:</b> Currently not available.  3.9 <b>Chronic Toxicity:</b> Currently not available  3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Vapor may irritate eyes and respiratory tract.  3.11 <b>Liquid or Solid Characteristics:</b> Liquid may irritate eyes and skin.  3.12 <b>Odor Threshold:</b> Currently not available  3.13 <b>IDLH Value:</b> Not listed.  3.14 <b>OSHA PEL-TWA:</b> Not listed.  3.15 <b>OSHA PEL-STEL:</b> Not listed.  3.16 <b>OSHA PEL-Ceiling:</b> Not listed.  3.17 <b>EPA AEG1:</b> Not listed</p>	

## 4. FIRE HAZARDS

- 4.1 **Flash Point:** 40°F C.C.  
4.2 **Flammable Limits in Air:** Currently not available  
4.3 **Fire Extinguishing Agents:** Small fires: dry chemical, CO<sub>2</sub>, 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 since this material floats.  
4.5 **Special Hazards of Combustion Products:** Fire may produce irritating and poisonous gases.  
4.6 **Behavior in Fire:** Flammable vapor may spread away from spill. Container may explode in heat of fire. Vapor explosion hazard indoors, outdoors or sewers. Runoff to sewer may create fire or explosion hazard. Fire may generate toxic and irritating gases.  
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:** No reaction  
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:** Currently not available

## 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** Currently not available  
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:** Not listed

## 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99%  
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:** 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:** 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:** Not listed  
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:** 68.13  
9.3 **Boiling Point at 1 atm:** 78.8°F = 26.0°C = 299.2°K  
9.4 **Freezing Point:** -234.9°F = -148.3°C = 124.9°K  
9.5 **Critical Temperature:** 369°F = 187°C = 460°K (est.)  
9.6 **Critical Pressure:** 540 psia = 37 atm = 3.7 MN/m<sup>2</sup> (est.)  
9.7 **Specific Gravity:** 0.6608 at 20°C  
9.8 **Liquid Surface Tension:** Currently not available  
9.9 **Liquid Water Interfacial Tension:** Currently not available  
9.10 **Vapor (Gas) Specific Gravity:** 2.3  
9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available  
9.12 **Latent Heat of Vaporization:** 180 Btu/lb = 100 cal/g = 4.20 x 10<sup>5</sup> J/kg  
9.13 **Heat of Combustion:** -20,316 Btu/lb = -11,288 cal/g = -47.3 x 10<sup>5</sup> J/kg  
9.14 **Heat of Decomposition:** Currently not available  
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
78	41.250	77	0.511		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 L E	-100 -75 -50 -25 0 25 50	0.066 0.151 0.345 0.788 1.798 4.101 9.357	-100 -75 -50 -25 0 25 50	0.00117 0.00251 0.00541 0.01163 0.02502 0.05383 0.11580		C U R R E N T L Y  N O T  A V A I L A B L E