

P-DINITROBENZENE

DNZ

CAUTIONARY RESPONSE INFORMATION

Common Synonyms 1,4-Dinitrobenzene		Solid Colorless to yellow
		Sinks and mixes slowly with water.
<p>Keep people away. AVOID CONTACT WITH SOLID AND DUST. Avoid inhalation. Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves). Evacuate area in case of large discharge. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>		
Fire	<p>Combustible. MAY EXPLODE IF SUBJECTED TO HEAT, SHOCK, OR FRICTION. POISONOUS GAS IS PRODUCED WHEN HEATED. Evacuate surrounding area. Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves). Combat fires from safe distance or protected location. Extinguish with water, CO₂, dry chemical, or carbon tetrachloride.</p>	
Exposure	<p>CALL FOR MEDICAL AID. DUST POISONOUS IF INHALED, OR IF SKIN IS EXPOSED. Move to fresh air. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. If breathing has stopped, give artificial respiration.</p> <p>SOLID POISONOUS IF SWALLOWED. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.</p>	
Water Pollution	<p>HARMFUL TO AQUATIC LIFE IN VERY LOW 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
Collection Systems: Pump; Dredge
Do not burn

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: Not listed.
2.2 Formula: C₆H₄(NO₂)₂
2.3 IMO/UN Designation: 6.1/1597
2.4 DOT ID No.: 1597
2.5 CAS Registry No.: 25154-54-5
2.6 NAERG Guide No.: 152
2.7 Standard Industrial Trade Classification: 51140

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Self-contained breathing apparatus, safety glasses, protective clothing and rubber gloves.
- 3.2 **Symptoms Following Exposure:** INHALATION OR INGESTION: Headache, vertigo, nausea, vomiting, diarrhea, fever, rapid weak pulse, decreased blood pressure, cyanosis, exhaustion, hepatomegaly, jaundice, albuminuria, hematuria, visual scotomata, amblyopia and nystagmus. EYES: Irritation. SKIN: Stains skin yellow; if skin contact is prolonged, can be absorbed into blood causing same symptoms as for inhalation.
- 3.3 **Treatment of Exposure:** Call a physician. INHALATION: Remove from contaminated area. Remove all clothing and wash entire body with soap and water. Get medical attention for methemoglobinemia. EYES: Flush with water for at least 15 minutes. SKIN: Remove from contaminated area. Remove all clothing and wash entire body with soap and water. Get medical attention for methemoglobinemia. INGESTION: Gastric lavage followed by saline catharsis.
- 3.4 TLV-TWA: 0.15 ppm
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 4; LD₅₀ below 50 mg/kg.
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Secondary anemia, liver damage. Irritability, weakness, headache, anorexia, weight loss, nausea, vomiting, cyanosis, dyspnea and skin discoloration.
- 3.10 **Vapor (Gas) Irritant Characteristics:** Not pertinent
3.11 **Liquid or Solid Characteristics:** Currently not available
3.12 **Odor Threshold:** Currently not available
3.13 **IDLH Value:** 50 mg/m³
3.14 **OSHA PEL-TWA:** 1 mg/m³
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:** 302°F C.C.
4.2 **Flammable Limits in Air:** Currently not available
4.3 **Fire Extinguishing Agents:** Water, CO₂, dry chemical or carbon tetrachloride
4.4 **Fire Extinguishing Agents Not to Be Used:** Currently not available
4.5 **Special Hazards of Combustion Products:** When heated to decomposition toxic fumes of oxides of nitrogen released.
4.6 **Behavior in Fire:** Decomposes explosively. Can be detonated by shock or heat under confinement that will permit high pressure buildup
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):** 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:** Currently not available
5.3 **Stability During Transport:** Severe explosion hazard.
5.4 **Neutralizing Agents for Acids and Caustics:** Currently not available
5.5 **Polymerization:** Currently not available
5.6 **Inhibitor of Polymerization:** Currently not available

6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:** 8 to 10 mg/l/6-hour/minimum lethal dose/Minnnows/fresh water
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:** Commercial
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:** Poison
8.2 **49 CFR Class:** 6.1
8.3 **49 CFR Package Group:** II
8.4 **Marine Pollutant:** No
8.5 **NFPA Hazard Classification:** Not listed
8.6 **EPA Reportable Quantity:** 100 pounds
8.7 **EPA Pollution Category:** B
8.8 **RCRA Waste Number:** Not listed
8.9 **EPA FWPCA List:** Yes

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid
9.2 **Molecular Weight:** 168.11
9.3 **Boiling Point at 1 atm:** 570.2°F = 299°C = 572.2°K
9.4 **Freezing Point:** 343.4°F = 173°C = 446.2°K
9.5 **Critical Temperature:** Currently not available
9.6 **Critical Pressure:** Currently not available
9.7 **Specific Gravity:** 1.625 at 18°C
9.8 **Liquid Surface Tension:** Not pertinent
9.9 **Liquid Water Interfacial Tension:** Not pertinent
9.10 **Vapor (Gas) Specific Gravity:** Currently not available
9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
9.12 **Latent Heat of Vaporization:** 142.8 btu/lb = 79.4 cal/g = 3.32 X 10⁵ J/kg
9.13 **Heat of Combustion:** -7193 btu/lb = -3996 cal/g = -167.2 X 10⁵ J/kg These values for meta isomer. Use as estimate for p.
9.14 **Heat of Decomposition:** Currently not available
9.15 **Heat of Solution:** Currently not available
9.16 **Heat of Polymerization:** Currently not available
9.17 **Heat of Fusion:** 39.99 cal/g
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
	N O T	75 80 85 90 95 100 105 110 115 120 125 130 135 140	0.260 0.262 0.263 0.265 0.266 0.268 0.269 0.271 0.273 0.274 0.276 0.277 0.279 0.281		N O T		N O T
	P E R T I N E N T				P E R T I N E N T		P E R T I N E N T

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
0	212.000	320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500	0.247 0.311 0.388 0.481 0.594 0.728 0.888 1.078 1.302 1.564 1.872 2.231 2.647 3.130 3.686 4.327 5.061 5.901 6.859		N O T		C U R R E N T L Y
					P E R T I N E N T		N O T A V A I L A B L E