

# ISOPHORONE DIISOCYANATE

IPD

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b>		Liquid	Colorless or yellowish
IPDI Isophorone diamine diisocyanate		Sinks and reacts with water to produce carbon dioxide and the diamine.	
<p>Keep people away. Avoid contact with liquid and vapor.                  Wear positive pressure breathing apparatus and special chemical protective suit.                  Call fire department. Shut off ignition sources.                  Notify local health and pollution control agencies.</p>			
<b>Fire</b>	Combustible. POISONOUS GASES ARE PRODUCED IN FIRE. Wear positive pressure breathing apparatus and special chemical protective suit. Extinguish small fires with dry chemical, CO <sub>2</sub> , water spray or foam; large fires with water spray, fog or foam. (It reacts with water to produce carbon dioxide and the corresponding diamine.)		
<b>Exposure</b>	CALL FOR MEDICAL AID.  VAPOR POISONOUS. MAY BE FATAL IF INHALED OR ABSORBED THROUGH SKIN. Contact may cause burns to skin and eyes. Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.  LIQUID POISONOUS. MAY BE FATAL IF SWALLOWED OR ABSORBED THROUGH SKIN. Contact may burn skin and eyes. Immediately flush skin or eyes with running water for at least 15 minutes. Hold eyelids open periodically while flushing eyes. Speed in removing material from skin is of extreme importance. Remove and isolate contaminated clothing and shoes at the site. Keep victim quiet and maintain normal body temperature. Effects may be delayed; keep victim under observation. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.		
<b>Water Pollution</b>	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.		

<b>1. CORRECTIVE RESPONSE ACTIONS</b> Stop discharge	<b>2. CHEMICAL DESIGNATIONS</b> 2.1 <b>CG Compatibility Group:</b> 12; Isocyanates 2.2 <b>Formula:</b> C <sub>12</sub> H <sub>18</sub> N <sub>2</sub> O <sub>2</sub> 2.3 <b>IMO/UN Designation:</b> 6.1/2290 2.4 <b>DOT ID No.:</b> 2290 2.5 <b>CAS Registry No.:</b> 4098-71-9 2.6 <b>NAERG Guide No.:</b> 156 2.7 <b>Standard Industrial Trade Classification:</b> 51489
<b>3. HEALTH HAZARDS</b>	
3.1 <b>Personal Protective Equipment:</b> Wear positive pressure breathing apparatus and special protective clothing. 3.2 <b>Symptoms Following Exposure:</b> Poisonous. May be fatal if inhaled, swallowed or absorbed through skin. Contact may cause burns to skin and eyes. 3.3 <b>Treatment of Exposure:</b> INHALATION: Move victim to fresh air; call emergency medical care. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. EYES: Immediately flush eyes with running water for at least 15 minutes; hold eyelids open periodically. SKIN: Immediately flush skin with running water for at least 15 minutes. Speed in removing material from skin is of extreme importance. Remove and isolate contaminated clothing and shoes at the site. Keep victim quiet and maintain normal body temperature. Effects may be delayed; keep victim under observation. INGESTION: If victim is unconscious or having convulsions, do nothing but keep him quiet and maintain normal body temperature. 3.4 <b>TLV-TWA:</b> 0.005 ppm. 3.5 <b>TLV-STEL:</b> Not listed. 3.6 <b>TLV-Ceiling:</b> Not listed. 3.7 <b>Toxicity by Ingestion:</b> Grade 2; LD <sub>50</sub> > 2.6 g/kg (rat) 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> Currently not available 3.11 <b>Liquid or Solid Characteristics:</b> Currently not available 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 AEGL:</b> Not listed	

## 4. FIRE HAZARDS

- 4.1 **Flash Point:** Currently not available
- 4.2 **Flammable Limits in Air:** Currently not available
- 4.3 **Fire Extinguishing Agents:** Small Fires: Dry chemical, CO<sub>2</sub>, water spray or foam. Large Fires: Water spray, fog or foam. (Reacts with water to produce gaseous carbon dioxide and the corresponding diamine.)
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Although water is suitable for extinguishing open air fires, it should not be allowed to contaminate closed tanks containing this material due to the risk of hazardous gas generation.
- 4.5 **Special Hazards of Combustion Products:** Contain toxic fumes of NO<sub>x</sub>.
- 4.6 **Behavior in Fire:** Undergoes oxidation to produce toxic fumes containing NO<sub>x</sub>.
- 4.7 **Auto Ignition Temperature:** Currently not available
- 4.8 **Electrical Hazards:** Not pertinent
- 4.9 **Burning Rate:** Currently not available
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 83.3 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 23.0 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

## 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** Reacts with water to produce water-soluble isophorone diamine (a toxic and corrosive compound) and carbon dioxide.
- 5.2 **Reactivity with Common Materials:** Contact with aluminum, aluminum alloys, copper or copper alloys is prohibited.
- 5.3 **Stability During Transport:** Currently not available
- 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:** 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:**  
 Bioaccumulation: -  
 Damage to living resources: 3  
 Human Oral hazard: 1  
 Human Contact hazard: II  
 Reduction of amenities: XXX

## 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available
- 7.2 **Storage Temperature:** Not listed
- 7.3 **Inert Atmosphere:** Inerted
- 7.4 **Venting:** Pressure-Vacuum
- 7.5 **IMO Pollution Category:** B
- 7.6 **Ship Type:** 2
- 7.7 **Barge Hull Type:** Currently not available

## 8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Keep Away From Food
- 8.2 **49 CFR Class:** 6.1
- 8.3 **49 CFR Package Group:** III
- 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:** 222.32
- 9.3 **Boiling Point at 1 atm:** Currently not available
- 9.4 **Freezing Point:** -76°F = -60°C = 213°K
- 9.5 **Critical Temperature:** Currently not available
- 9.6 **Critical Pressure:** Currently not available
- 9.7 **Specific Gravity:** 1.056 to 1.062 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:** 7.7 (calculated)
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
- 9.12 **Latent Heat of Vaporization:** Currently not available
- 9.13 **Heat of Combustion:** Currently not available
- 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

# ISOPHORONE DIISOCYANATE

IPD

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	66.100		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
	R E A C T S		N O T  P E R T I N E N T		N O T  P E R T I N E N T		C U R R E N T L Y  N O T  A V A I L A B L E