Paraformaldehyde MSDS

Product Name and Identification

Product Name: Paraformaldehyde
Synonyms: Polyoxymethylene, Paraform
CAS Number: 30525-89-4
Chemical Formula: (CH2O)n
Product Use: Used in synthetic resins, disinfectants, fumigants, and as a laboratory chemical.
Manufacturer Information: [Provide specific details if applicable]

Composition/Ingredients

Chemical Name: Paraformaldehyde
Concentration: >95%
CAS Number: 30525-89-4
EC Number: 608-494-4
Molecular Weight: Depends on polymerization; equivalent weight varies based on (CH2O)n structure.

Hazards Identification

Classification of the Substance:

- Flammable Solid: Category 2
- Acute Toxicity (Oral): Category 3
- Acute Toxicity (Dermal): Category 3
- Skin Irritation: Category 2
- Eye Irritation/Damage: Category 2A
- Skin Sensitization: Category 1
- Carcinogenicity: Category 1B

Labeling:

- **Signal Word:** Danger
- **Hazard Statements:**
  - H228: Flammable solid.
  - H301 + H311: Toxic if swallowed or in contact with skin.
  - H315: Causes skin irritation.
  - H317: May cause an allergic skin reaction.

    - H319: Causes serious eye irritation.
    - H350: May cause cancer.
- **Precautionary Statements:**
    - P210: Keep away from heat, sparks, open flames, and hot surfaces.
    - P261: Avoid breathing dust or fumes.
    - P280: Wear protective gloves, clothing, and eye/face protection.
    - P301 + P310: If swallowed, call a poison center or doctor immediately.
    - P302 + P352: If on skin, wash with plenty of soap and water.

Additional Hazards:
Heated material may release toxic formaldehyde vapor.

First Aid Measures

General Advice: Remove exposed individuals from the area immediately. Seek medical attention if symptoms worsen or persist.

- **Eye Contact:** Rinse eyes with water cautiously for at least 15 minutes. Remove contact lenses if easy to do. Seek medical attention if irritation continues.
- **Skin Contact:** Wash thoroughly with soap and water. Remove contaminated clothing. If irritation or rash develops, contact a physician.
- **Inhalation:** Move to fresh air. If breathing difficulties arise, administer oxygen if trained and seek immediate medical attention.
- **Ingestion:** Rinse mouth with water. Do not induce vomiting. Consult a doctor immediately.

Key Symptoms and Effects: Prolonged exposure may cause respiratory irritation, coughing, skin sensitization, or more severe reactions like toxic effects.

Handling and Storage

Handling:

- Avoid generating or inhaling dust.
- Use protective equipment to prevent skin and eye contact.
- Keep away from open flames or hot surfaces due to flammability.

Storage:

- Store in a tightly sealed container in a cool, dry, well-ventilated area.
- Keep away from incompatible materials such as strong oxidizing agents and acids.

- Protect from moisture to avoid decomposition.

Specific Storage Conditions: Avoid prolonged exposure to heat and light.

Exposure Controls/Personal Protection

Exposure Limits:

- **OSHA PEL:** 0.75 ppm (formaldehyde vapor, if released).
- **ACGIH TLV:** 0.3 ppm (as formaldehyde).

Engineering Controls:
Provide adequate mechanical ventilation or local exhaust to control airborne concentrations.

Personal Protective Equipment (PPE):

- **Eye Protection:** Chemical safety goggles or face shield.
- **Skin Protection:** Chemical-resistant gloves (e.g., nitrile).
- **Respiratory Protection:** Use an approved respirator if airborne concentration exceeds limits.
- **General Hygiene Measures:** Wash thoroughly after handling. Avoid eating, drinking, or smoking near the material.

Physical and Chemical Properties

- **Physical State:** Solid (powder or granular form)
- **Appearance:** White to off-white powder
- **Odor:** Pungent formaldehyde-like odor
- **Melting Point:** Depolymerizes; formaldehyde released above 120°C (248°F).
- **Boiling Point:** Not applicable (decomposes).
- **Flash Point:** Approximately 70°C (158°F)
- **Solubility:** Slightly soluble in water (decomposes to formaldehyde).
- **Density:** 1.46 g/cm^3
- **Vapor Pressure:** Negligible at room temperature.
- **Autoignition Temperature:** 300°C (572°F)

Stability and Reactivity

Chemical Stability: Stable under recommended storage conditions. Decomposes slowly in the presence of moisture to release formaldehyde gas.

Conditions to Avoid: High humidity, heat, sparks, flames, and incompatible materials.

Materials to Avoid: Strong oxidizing agents, acids, and alkalis.

Hazardous Decomposition Products: Formaldehyde gas, carbon monoxide, carbon dioxide.

Reactivity: Reacts with strong bases and acids; may polymerize under certain conditions.

Toxicological Information

Routes of Exposure:

- Skin contact
- Eye contact
- Dust inhalation
- Accidental ingestion

Acute Toxicity:

- **Oral LD50 (Rat):** Approximately 800 mg/kg
- **Dermal LD50 (Rabbit):** Approximately 300 mg/kg

Chronic Effects: Prolonged exposure to vapor or dust may lead to formaldehyde exposure symptoms, causing sensitization or organ damage.

Irritation: Causes irritation to skin, eyes, and respiratory tract.

Carcinogenicity: Classified as a potential human carcinogen by OSHA, IARC, and NTP due to formaldehyde content.

Other Health Effects: Sensitization risk for skin; chronic respiratory exposure may worsen asthma-like conditions.

Disposal Considerations

General Disposal Guidelines:
Dispose of the chemical and its materials in accordance with local, state, and federal environmental regulations.

Specific Disposal Instructions:

- Do not dispose of into water drains or soil.
- Combust in a chemical incinerator equipped with an afterburner and scrubber system.
- Contaminated packaging should be disposed of as hazardous waste if not thoroughly cleaned.

Recycling Information: Any recycling must follow regional and national guidelines.