Itaconic Acid MSDS

1. Product Name and Identification

Product Name: Itaconic Acid
Synonyms: Methylenesuccinic acid, Propene dicarboxylic acid
Chemical Formula: $C_5H_6O_4$
CAS Number: 97-65-4
Intended Use: Used in the production of adhesives, coatings, and polymers; also as an intermediate for various industrial applications.

2. Composition/Ingredients

Chemical Name: Itaconic Acid

- **CAS Number:** 97-65-4
- **Purity:** ≥ 99%
  Other minor impurities are present in trace amounts, typically less than 1%.

3. Hazards Identification

Hazard Categories:

- Causes skin irritation
- Causes serious eye irritation
- May be harmful if inhaled in high concentrations of dust

Label Elements:

- **Signal Word:** Warning
- **Hazard Statements:**
  - May cause irritation to the eyes and skin
  - Prolonged inhalation of fine dust may lead to respiratory discomfort

Precautionary Measures:

- Wear protective clothing and equipment to minimize exposure
- Avoid generating or inhaling dust
- Keep containers tightly sealed to reduce accidental spills

Main Exposure Routes:

- Contact with eyes and skin
- Dust inhalation
- Accidental ingestion

4. First Aid Measures

Eye Contact: Rinse the eyes gently and thoroughly with clean, lukewarm water for at least 15 minutes. Remove contact lenses if applicable. Seek medical attention if irritation persists.
Skin Contact: Wash the affected area with soap and water, ensuring all residues are removed. If irritation develops, consult a healthcare professional.
Inhalation: Move the affected individual to an area with fresh air. If symptoms such as coughing or difficulty breathing occur, obtain medical assistance.
Ingestion: Rinse mouth with water and drink small amounts of water. Do not induce vomiting. Contact medical services immediately for further instruction.

5. Handling and Storage

Handling Precautions:

- Minimize dust formation by handling in a controlled, clean area
- Avoid direct skin and eye contact
- Follow good hygiene practices, including washing hands after use and before meals

Storage Recommendations:

- Store in a tightly closed container in a well-ventilated, dry, and cool environment
- Keep away from moisture, high temperatures, and reactive chemicals such as strong oxidizers or bases

6. Exposure Controls/Personal Protection

Engineering Controls:

- Use local exhaust ventilation or dust extraction systems where dust may form
- Ensure that workspaces remain free of airborne concentrations exceeding recommended levels

Personal Protective Equipment (PPE):

- **Eye Protection:** Safety goggles to protect against splashes or dust
- **Gloves:** Chemical-resistant gloves to prevent skin contact
- **Respiratory Protection:** Approved particulate respirator when airborne concentrations are significant or exceed safe levels
- **Body Protection:** Long-sleeved clothing and closed-toe shoes

General Hygiene Measures:

- Always wash hands and exposed skin areas thoroughly after handling
- Avoid smoking, eating, or drinking in proximity to the substance

7. Physical and Chemical Properties

- **Appearance:** White, crystalline solid
- **Odor:** Slightly sour odor
- **Melting Point:** 165–168 °C
- **Boiling Point:** Not applicable (decomposes before boiling)
- **Solubility:** Soluble in water and some organic solvents
- **pH:** ~2.0 (for a 1% aqueous solution)
- **Density:** ~1.63 g/cm^3
- **Vapor Pressure:** Negligible at ambient temperatures
- **Flammability:** Non-flammable under standard handling conditions

8. Stability and Reactivity

Stability: Stable when stored and handled in suitable conditions.
Reactivity: Avoid contact with strong oxidizing agents or strong bases, as these can cause decomposition.
Conditions to Avoid: Exposure to moisture, excessive heat, and contact with incompatible substances could degrade the product or increase the risk of harmful reactions.
Decomposition Products: When heated excessively, it may release carbon oxides as well as acrid fumes.

9. Toxicological Information

Acute Effects:

- Skin contact may result in mild irritation with prolonged exposure.
- Eye contact could cause redness and discomfort due to its acid properties.
- Dust inhalation may lead to slight irritation or coughing, depending on exposure levels.

Chronic Effects: Long-term exposure to significant levels of dust or particulate matter may irritate the respiratory system.
Carcinogenicity: Itaconic acid is not classified as a carcinogen by global standards.
Mutagenicity: No mutagenic effects have been identified based on available studies.

10. Disposal Considerations

Waste Disposal Guidelines: Dispose of unused material according to applicable local, state, or national regulations. The material should not be released into sewers, waterways, or soil.
Container Disposal: Clean and recycle containers where possible. If recycling is not an option, treat them as hazardous waste and dispose of them in compliance with regulations.

Note: This document is provided for informational purposes regarding safe handling and use of Itaconic Acid. Always conform to local legislation and workplace-specific guidelines for further handling instructions.