Formic Acid MSDS

1. Product Name and Identification

Product Name: Formic Acid
Synonyms: Methanoic Acid, Aminic Acid, Hydrogen Carboxylic Acid
CAS Number: 64-18-6
Recommended Uses: Preservative, Leather production, Agriculture, Chemical synthesis
Manufacturer/Distributor Details:

- **Name:** [Insert Manufacturer/Distributor Name]
- **Address:** [Insert Address]
- **Emergency Contact Number:** [Insert Contact Number]

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2. Composition/Ingredients

Substance/Preparation: Substance
Chemical Name: Formic Acid
CAS Number: 64-18-6
Percent Composition: 85%–99% (depending on grade)

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3. Hazards Identification

Classification of the Substance or Mixture:

- **Flammable Liquids:** Category 3
- **Acute Toxicity (Oral):** Category 4
- **Skin Corrosion/Irritation:** Category 1A
- **Serious Eye Damage/Irritation:** Category 1

Hazard Statements:

- Flammable liquid and vapor.
- Harmful if swallowed.
- Causes severe skin burns and eye damage.

Precautionary Statements:

- Keep away from heat, sparks, open flames, and hot surfaces.
- Wear protective gloves, protective clothing, and eye/face protection.

- Avoid breathing vapors or mist.
- Wash exposed areas thoroughly after handling.

Pictograms:

- [Insert placeholder for flame and corrosive symbols]

Additional Notes: Formic acid vapors can cause respiratory irritation; prolonged exposure should be avoided.

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4. First Aid Measures

General Information: Seek immediate medical attention for significant exposure.

Eyes: Rinse cautiously with water for at least 15 minutes. Remove contact lenses if present. Continue rinsing and seek immediate medical aid.

Skin: Remove contaminated clothing. Rinse the affected area thoroughly with water for at least 15 minutes. Seek medical assistance for burns.

Inhalation: Move to fresh air immediately. If breathing difficulties arise, seek medical attention. Administer oxygen if trained to do so.

Ingestion: Do NOT induce vomiting. Rinse mouth with water and drink plenty of water to dilute. Seek immediate medical attention.

Important Notes for Physicians: Treat symptomatically. Formic acid exposure may cause chemical burns; consider symptomatic treatments for burns and ingestion.

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5. Handling and Storage

Handling:

- Avoid contact with skin, eyes, and clothing.
- Handle in well-ventilated areas or under a fume hood to control vapor exposure.
- Always use appropriate protective equipment.

Storage:

- Store in tightly sealed containers in a cool, dry, and well-ventilated area.

- Keep away from heat, sparks, and incompatible materials such as strong oxidizers and bases.
- Protect containers from physical damage.

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6. Exposure Controls/Personal Protection

Engineering Controls:

- Use exhaust ventilation or a fume hood to maintain airborne concentrations below recommended limits.

Personal Protection Equipment (PPE):

- **Eye Protection:** Safety goggles or a face shield.
- **Skin Protection:** Chemical-resistant gloves (e.g., nitrile or neoprene).
- **Respiratory Protection:** Use an approved respirator in poorly ventilated areas or when exposure is likely.
- **Other:** Wear chemical-resistant clothing or aprons to protect sensitive or exposed areas of the skin.

Hygiene Measures:

- Wash hands and affected areas thoroughly after handling.
- Avoid eating, drinking, or smoking when using this product.

Exposure Limits:

- OSHA PEL (Permissible Exposure Limit): 5 ppm (TWA)
- ACGIH TLV (Threshold Limit Value): 5 ppm (TWA)

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7. Physical and Chemical Properties

- **Appearance:** Colorless liquid
- **Odor:** Pungent, sharp odor
- **Melting Point:** 8.4°C
- **Boiling Point:** 100.8°C
- **Flash Point:** 50°C (closed cup)
- **Auto-Ignition Temperature:** Approx. 480°C
- **Flammability:** Flammable liquid and vapor
- **Vapor Density:** 1.6 (air = 1)
- **Vapor Pressure:** Approx. 44 mmHg at 20°C

- **Solubility:** Completely soluble in water
- **Density:** Approximately 1.22 g/cm³ at 20°C
- **pH (1% solution):** 2.0–3.0
- **Molecular Formula:** CH_2O_2
- **Molecular Weight:** 46.03 g/mol

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8. Stability and Reactivity

Chemical Stability: Stable under recommended storage and handling conditions.

Conditions to Avoid: Heat, sparks, open flames, and incompatible materials.

Materials to Avoid: Strong oxidizing agents, bases, alkali metals.

Hazardous Decomposition Products: Thermal decomposition may produce carbon monoxide (CO) and carbon dioxide (CO_2).

Polymerization: Will not occur under normal conditions.

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9. Toxicological Information

Acute Toxicity:

- Oral LD50 (Rat): Approx. 730 mg/kg (moderate toxicity)
- Dermal LD50 (Rabbit): Approx. 1.5 g/kg

Skin Corrosion/Irritation: Causes severe burns upon direct contact.

Eye Damage/Irritation: Causes severe and permanent eye damage if exposed.

Respiratory Effects: Vapors can cause irritation to the respiratory tract; high concentrations may lead to coughing and difficulty breathing.

Chronic Effects: Prolonged skin exposure may cause redness, burns, or dermatitis. Long-term repeated inhalation may impact respiratory health.

Carcinogenicity: Not classified as carcinogenic by IARC, NTP, or OSHA.

Additional Information: Symptoms of overexposure may include shortness of breath, coughing, blurred vision, and skin burns from prolonged contact.

10. Disposal Considerations

Waste Disposal Methods:

- Dispose of unused product in compliance with local, state, and federal regulations. Avoid release into drains or waterways.
- Neutralize with an inert material (e.g., sodium bicarbonate solution) if safe to handle.

Packaging Disposal:

- Empty containers should be rinsed thoroughly before disposal or recycling. Ensure no residues remain.

Environmental Precautions: Avoid discharge into the environment; formic acid is toxic to aquatic ecosystems. Ensure disposal minimizes release to soil or water systems.