OXFORD LAB FINE CHEM LLP

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Oxford
Range of
Laboratory Chemicals

MATERIAL SAFETY DATA SHEET

FORMIC ACID 98%
(For Synthesis)
MSDS CAS: 64-18-6

Section 1: Chemical Product and Company Identification

Section 1: Chemical Product
Product Name: Formic acid 98%
CAS#: 64-18-6
Synonym: Methanoic acid
Chemical Name: Not applicable.
Chemical Formula: H.COOH

Brand: OXFORD

Details Of The Supplier Of The Safety Data Sheet :

Company identification: OXFORD LAB FINE CHEM LLP
Unit. No. 12, 1st Floor, Neminath Industrial Estate No. 6,
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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Formic acid	64-18-6	98%

Toxicological Data on Ingredients: Formic acid: ORAL (LD50): Acute: 700 mg/kg [Mouse]. 1100 mg/kg [Rat]. 4000 mg/kg [Dog]. VAPOR (LC50): Acute: 6200 mg/m 0.25 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (irritant), of eye contact (irritant, corrosive), of ingestion, . Hazardous in case of skin contact (corrosive, permeator). Slightly hazardous in case of inhalation (lung sensitizer). Non-corrosive for lungs. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Formic acid]. Mutagenic for bacteria and/or yeast. [Formic acid]. TERATOGENICEFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, upper respiratory tract, skin, eyes, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Section 4: First Aid Measures (Continued)

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: **Not available.**

Section 5: Fire and Explosion Data

Flammability of the Product: **Combustible.**

Auto-Ignition Temperature: **The lowest known value is 539°C (1002.2°F) (Formic acid).**

Flash Points: **The lowest known value is OPEN CUP: 69°C (156.2°F). (Formic acid)**

Flammable Limits: **The greatest known range is LOWER: 18% UPPER: 57% (Formic acid).**

Products of Combustion: **These products are carbon oxides (CO, CO2).**

Fire Hazards in Presence of Various Substances:
Flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of metals. Nonflammable in presence of shocks, of oxidizing materials, of reducing materials, of combustible materials, of organic materials, of acids, of alkalis, of moisture.

Explosion Hazards in Presence of Various Substances:
Explosive in presence of oxidizing materials. Slightly explosive in presence of organic materials, of metals. Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder.
LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Section 5: Fire and Explosion Data (Continued)

Special Remarks on Fire Hazards:

Decomposes more rapidly under fire conditions, forming carbon monoxide. Aluminum reduces formic acid (itself a reductant) with incandescence. (Formic acid).

Special Remarks on Explosion Hazards:

Formic acid forms explosive reactions with the following: Furfuryl alcohol, Hydrogen Peroxide + organic matter; Nitromethane, P2O5, Thallic nitrate trihydrate +vanillin, and oxidizing agents Explosive decompositon of Formic Acid on clean nickel. (Formic acid)

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:

Combustible material. Corrosive liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep locked up.. Keep container dry. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, organic materials, acids, alkalis.

Storage:

Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

Formic acid TWA: 5 STEL: 10 (ppm) from ACGIH (TLV) [United States] [1999] TWA: 9 (mg/m3) from NIOSH TWA: 5 (ppm) from NIOSH TWA: 9 (mg/m3) from OSHA (PEL) [United States] TWA: 5 (ppm) from OSHA (PEL) [United States] TWA: 5 (ppm) [United Kingdom (UK)] TWA: 9.3 (mg/m3) [United Kingdom (UK)]3 Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor	: Pungent. Penetrating. Benzaldehyde-like
Taste	: Sour
Molecular Weight	: Not applicable.
Color	: Clear Colorless.
pH (1% soln/water)	: 2.2
Boiling Point	: The lowest known value is 100°C (212°F) (Water). Weighted average: 100.67°C (213.2°F)
Melting Point	: May start to solidify at 8.4°C (47.1°F) based on data for: Formic acid.
Critical Temperature	: Not available.
Specific Gravity	: Weighted average: 1.21 (Water = 1)
Vapor Pressure	: The highest known value is 4.7 kPa (@ 20°C) (Formic acid). Weighted average: 4.6 kPa (@ 20°C)
Vapor Density	: The highest known value is 1.59 (Air = 1) (Formic acid). Weighted average: 1.55 (Air = 1)

Section 9: Physical and Chemical Properties (Continued)

Volatility : Not available.
Odor Threshold : The highest known value is 0.625 ppm (Formic acid)
Water/Oil Dist. Coeff. : Not available.
Ionicity (in Water) : Not available.
Dispersion Properties : See solubility in water, diethyl ether, and acetone.
Solubility : Easily soluble in acetone. Soluble in cold water, hot water, diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatible materials.

Incompatibility with various substances:
Highly reactive with oxidizing agents. Reactive with organic materials, metals, acids, alkalis.

Corrosivity:
Highly corrosive in presence of copper. Corrosive in presence of stainless steel(304). Non-corrosive in presence of glass, of aluminum, of stainless steel(316).

Special Remarks on Reactivity:
Formic acid is a strong reducing agent. Decomposes slowly during storage! Vent Container At Least Monthly. Formic acid may react with alkalies and oxidizing materials such as peroxides, nitric acid, and chromic acid. It is also incompatible with concentrated Sulfluric Acid, Nitromethane, finely powdered metals, permanganates, strong bases, oxidizing agents. (Formic acid).

Special Remarks on Corrosivity: Corrosive to metals.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Section 11: Toxicological Information (Continued)

Toxicity to Animals:

Acute oral toxicity (LD50): 729 mg/kg (Mouse) (Calculated value for the mixture).

Chronic Effects on Humans:

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Formic acid]. Mutagenic for bacteria and/or yeast. [Formic acid]. May cause damage to the following organs: kidneys, liver, upper respiratory tract, skin, eyes, and central nervous system (CNS).

Other Toxic Effects on Humans:

Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (irritant), of eye contact (corrosive), of ingestion,. Hazardous in case of skin contact (corrosive, permeator).

Special Remarks on Toxicity to Animals: Not Available.

Special Remarks on Chronic Effects on Humans: May affect genetic material (mutagenic).

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Corrosive. Causes skin irritation and burns. Absorbed through the skin. May cause erythema and blistering. Eyes: Corrosive. Causes eye irritation and burns. Lachrymator. May cause corneal edema, ulceration and scaring. Vapors may cause itching, burning and swelling of the eyes. Inhalation: Affects respiration and causes respiratory tract irritation and burns. Vapors may affect behavior (brain) and sense organs and cause dizziness, and nausea. May also affect the urinary system and liver Ingestion: May be harmful if swallowed. Causes digestive tract irritation and burns with abdominal pain, vomiting, and possible death. May product corrosive ulceration and bleeding, and necrosis of the gastrointestinal tract. May also affect the cardiovascular system, urinary system, blood, behavior, and metabolism. Chronic Potential Health Effects: Prolonged or repeated skin contact may cause dermatitis. May cause liver and kidney damage. Effects may be delayed. Laboratory experiments have resulted in mutagenic effects.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Section 12: Ecological Information (Continued)

Toxicity of the Products of Biodegradation:
The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: **Not available.**

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

Land transport (ADR-RID)

Proper shipping name: FORMIC ACID with more than 85% acid by mass
UN N°: 1779
H.I. nr: 83
ADR - Class: 8
Labelling - Transport: 8 : Corrosive substance. 3 : Flammable liquid.
ADR - Group: II

Sea transport (IMDG) [English only]

Proper shipping name: FORMIC ACID with more than 85% acid by mass
UN N°: 1779
IMO-IMDG - Class or division: 8 : Corrosive substance. (3 : Flammable liquid.)
IMO-IMDG - Packing group: II

Air transport (ICAO-IATA) [English only]

Proper shipping name: FORMIC ACID with more than 85% acid by mass
UN N°: 1779
IATA - Class or division: 8 : Corrosive substance. (3 : Flammable liquid.)
IATA - Packing group: II

Section 15: Other Regulatory Information

Federal and State Regulations:

New York release reporting list: Formic acid Rhode Island RTK hazardous substances: Formic acid Pennsylvania RTK: Formic acid Florida: Formic acid Minnesota: Formic acid Massachusetts RTK: Formic acid New Jersey: Formic acid TSCA 8(b) inventory: Formic acid; Water SARA 313 toxic chemical notification and release reporting: Formic acid CERCLA: Hazardous Substances. Formic acid: 5000 lbs. (2268 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). CLASS E: Corrosive liquid.

DSCL (EEC): Not Available.

HMIS (U.S.A.):

Health Hazard: 3
Fire Hazard: 2
Reactivity: 0
Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3
Flammability: 2
Reactivity: 0
Specific hazard:

Protective Equipment:

Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16 - Additional Information

References: Not available.

Other Special Considerations: Not available.

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