

MATERIAL SAFETY DATA SHEET

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Version 1.5

Section 1 - Product and Company Information

Product Name FORMIC ACID, FCC
Product Number W248703
Brand ALDRICH

Company Sigma-Aldrich Canada, Ltd
Street Address 2149 Winston Park Drive
City, State, Zip, Country Oakville ON L6H 6J8 CA
Technical Phone: 9058299500
Emergency Phone: 800-424-9300
Fax: 9058299292

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
FORMIC ACID	64-18-6	Yes

Formula CH2O2
Synonyms Acide formique (French) * Acido formico (Italian)
* Ameisensaure (German) * Aminic acid * Formic
acid (ACGIH:OSHA) * Formic acid * Hydrogen
carboxylic acid * Kwas metaniowy (Polish) *
Kyselina mravenci (Czech) * Methanoic acid *
Mierenzuur (Dutch) * RCRA waste number U123
RTECS Number: LQ4900000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Corrosive.

Causes severe burns. Toxic by inhalation. Harmful if swallowed.

Combustible. Possible sensitizer. Target organ(s): Liver. Kidneys.

HMIS RATING

HEALTH: 3*

FLAMMABILITY: 2

REACTIVITY: 1

NFPA RATING

HEALTH: 3

FLAMMABILITY: 2

REACTIVITY: 1

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is
conscious. Call a physician. Do not induce vomiting.

INHALATION EXPOSURE

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

DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT

156 °F 69 °C Method: closed cup

EXPLOSION LIMITS

Lower: 18 % Upper: 57 %

AUTOIGNITION TEMP

540 °C

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

SPECIAL REQUIREMENTS

Vent periodically. May develop pressure. Open carefully.
Hygrosopic.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

Other: Faceshield (8-inch minimum).

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	STEL	10 PPM
USA	ACGIH	TWA	5 PPM
USA	MSHA Standard-air	TWA	5 PPM (9 MG/M3)
USA	OSHA.	PEL	8H TWA 5 PPM (9 MG/M3)
New Zealand	OEL		
Remarks:	check ACGIH TLV		
USA	NIOSH	TWA	5 PPM

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Liquid Color: Colorless	
Property	Value	At Temperature or Pressure
Molecular Weight	46.03 AMU	
pH	N/A	
BP/BP Range	100.8 °C	760 mmHg
MP/MP Range	8.5 °C	
Freezing Point	N/A	
Vapor Pressure	44.8 mmHg	20 °C
Vapor Density	1.6 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.2 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	156 °F 69 °C	Method: closed cup
Explosion Limits	Lower: 18 % Upper: 57 %	
Flammability	N/A	
Autoignition Temp	540 °C	
Refractive Index	1.3721	
Optical Rotation	N/A	

Miscellaneous Data N/A
Solubility N/A

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions to Avoid: Moisture.

Materials to Avoid: Strong oxidizing agents, Strong bases, Finely powdered metals.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: Causes burns.

Skin Absorption: May be harmful if absorbed through the skin.

Readily absorbed through skin.

Eye Contact: Causes burns.

Inhalation: High concentrations are extremely destructive to the tissue of the mucous membranes and upper respiratory tract. Toxic if inhaled.

Ingestion: Harmful if swallowed. Ingestion can cause immediate burning pain in the mouth, throat, abdomen; severe swelling of the larynx and skeletal paralysis affecting the ability to breathe, circulatory shock and convulsions.

SENSITIZATION

Sensitization: Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals.

TARGET ORGAN(S) OR SYSTEM(S)

Kidneys. Liver. Central nervous system. Blood.

SIGNS AND SYMPTOMS OF EXPOSURE

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

TOXICITY DATA

Oral

Woman

2.44 mg/kg

LDLO

Remarks: Vascular: Shock. Blood: Other hemolysis with or without anemia. Nutritional and Gross Metabolic: Changes in: Metabolic acidosis.

Oral

Rat

1100 mg/kg
LD50
Remarks: Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Inhalation
Rat
15,000 mg/m3
LC50
Remarks: Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Oral
Mouse
700 mg/kg
LD50
Remarks: Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Inhalation
Mouse
6,200 mg/m3
LC50
Remarks: Behavioral:Somnolence (general depressed activity).
Lungs, Thorax, or Respiration:Dyspnea.

Intraperitoneal
Mouse
940 MG/KG
LD50

Intravenous
Mouse
145 MG/KG
LD50

Oral
Dog
4000 mg/kg
LD50

IRRITATION DATA

Skin
Rabbit
610 mg
Remarks: Open irritation test

Eyes
Rabbit
122 mg
Remarks: Severe irritation effect

CHRONIC EXPOSURE - MUTAGEN

Species: Human
Dose: 10 MMOL/L
Cell Type: lymphocyte
Mutation test: Sister chromatid exchange

Species: Hamster
Dose: 10 MMOL/L

Cell Type: ovary
Mutation test: Cytogenetic analysis

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Formic acid
UN#: 1779
Class: 8
Packing Group: Packing Group II
Hazard Label: Corrosive
PIH: Not PIH

IATA

Proper Shipping Name: Formic acid
IATA UN Number: 1779
Hazard Class: 8
Packing Group: II

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: C
Indication of Danger: Corrosive.
R: 35
Risk Statements: Causes severe burns.
S: 23 26 45
Safety Statements: Do not breathe vapor. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Corrosive.
Risk Statements: Causes severe burns. Toxic by inhalation.
Harmful if swallowed.
Safety Statements: Do not breathe vapor. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
US Statements: Combustible. Possible sensitizer. Target organ(s): Liver. Kidneys.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes
DEMINIMIS: 1 %
NOTES: This product is subject to SARA section 313 reporting requirements.
TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Section 16 - Other Information

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.