

Safety Data Sheet

LCMS Grade Formic Acid

SECTION 1: Identification**1.1 Product identifier**

Product name	LCMS Grade Formic Acid
Product number	11202
Brand	CovaChem, LLC.
Substance name	FORMIC ACID
EC no.	200-579-1
CAS no.	64-18-6
Index no.	607-001-00-0

1.3 Recommended use of the chemical and restrictions on use

For use in the preparation of mobile phase solvents in liquid chromatography and mass spectrometry applications. Not intended for use in human diagnostics or for human consumption.

1.4 Supplier's details

Name	CovaChem, LLC.
Address	6260 East Riverside Blvd Suite 119 Loves Park, IL 61111 United States
Telephone	815-315-1271
Fax	815-315-1272
email	info@covachem.com

1.5 Emergency phone number(s)

PERS Professional Emergency Response Service
Company Code 11814
1-800-633-8253 (U.S. & Canada)
1-801-629-0667 (International)
1800-865-237 (Australia toll-free)

SECTION 2: Hazard identification**2.1 Classification of the substance or mixture**

- Acute toxicity, oral (chapter 3.1), Cat. 3
- Acute toxicity, oral (chapter 3.1), Cat. 5
- Acute toxicity, dermal (chapter 3.1), Cat. 4
- Skin corrosion/irritation (chapter 3.2), Cat. 1
- Sensitization, skin (chapter 3.4), Cat. 1
- Acute toxicity, inhalation (chapter 3.1), Cat. 3
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 3
- Skin corrosion/irritation (chapter 3.2), Cat. 1A

2.2 GHS label elements, including precautionary statements

Safety Data Sheet

LCMS Grade Formic Acid

Pictogram



Signal word

Danger

Hazard statement(s)

H226	Flammable liquid and vapor
H301	Toxic if swallowed
H303	May be harmful if swallowed
H314	Causes severe skin burns and eye damage
H317	May cause an allergic skin reaction
H331	Toxic if inhaled
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H370	Causes damage to organs
H372	Causes damage to organs through prolonged or repeated exposure
H402	Harmful to aquatic life

Precautionary statement(s)

P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, sparks, and open flames. No smoking.
P234	Keep only in original container.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P264	Wash arms, hands and face thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves and eye protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or physician if you feel unwell.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P312	If exposed: Call a POISON CENTER or physician. Seek medical attention if you feel unwell.
P321	Specific treatment (wash with plenty of water).
P363	Wash contaminated clothing before reuse.
P378	Use dry chemical, foam or carbon dioxide to extinguish.
P403+P233	Store in a well ventilated place. Keep container tightly closed.
P405	Store locked up.
P406	Store in a corrosive resistant container with a resistant inner liner.
P501	Dispose of contents in accordance with local, state, federal and international regulations.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name	FORMIC ACID
EC no.	200-579-1
CAS no.	64-18-6
Index no.	607-001-00-0
Formula	CH2O2
Molecular weight	46.02

Safety Data Sheet

LCMS Grade Formic Acid

Other names / synonyms formic acid > 98%; FORMIC ACID, conc.>90%; UN1779; METHANOIC ACID; HYDROGEN CARBOXYLIC ACID; FORMYLIC ACID; AMINIC ACID; FORMICACID; FORMIC ACID

Hazardous components

1. Formic Acid

Concentration	98 - 100 %
EC no.	200-579-1
CAS no.	64-18-6
Index no.	607-001-00-0

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice

*SKIN CONTACT:

IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. IMMEDIATELY call a hospital or poison control center even if no symptoms (such as redness or irritation) develop. IMMEDIATELY transport the victim to a hospital for treatment after washing the affected areas.

*INHALATION:

IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Respirator Recommendation.

*EYE CONTACT:

First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

*INGESTION:

DO NOT INDUCE VOMITING. Corrosive chemicals will destroy the membranes of the mouth, throat, and esophagus and, in addition, have a high risk of being aspirated into the victim's lungs during vomiting which increases the medical problems. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. IMMEDIATELY transport the victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. Transport the victim IMMEDIATELY to a hospital.

*SYMPTOMS:

Safety Data Sheet

LCMS Grade Formic Acid

Symptoms resulting from exposure to this compound include severe irritation of skin, eyes, and mucous membranes; lacrimation, increased nasal discharge, cough, throat discomfort, erythema and blistering. Others symptoms usually associated only with ingestion include salivation, vomiting, burning sensation in mouth, bloody vomiting, diarrhea, nausea and pain. In severe poisoning shock may occur, followed by breathing difficulties and kidney damage [346]. It may cause severe burns [025]. Other symptoms include albuminuria and hematuria [031]. It can also cause local necrosis [151]. Signs of fatal poisoning are decreased pulse rate and respiration; drop in blood pressure, cyanosis and ultimately death [053].

If inhaled

IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Respirator Recommendation.

In case of skin contact

IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. IMMEDIATELY call a hospital or poison control center even if no symptoms (such as redness or irritation) develop. IMMEDIATELY transport the victim to a hospital for treatment after washing the affected areas.

In case of eye contact

First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

If swallowed

If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. Transport the victim IMMEDIATELY to a hospital.

4.2 Most important symptoms/effects, acute and delayed

Depending on the intensity and duration of exposure, effects of exposure to this chemical may vary from mild irritation to severe destruction of tissue. Vapors of this compound may produce irritation of the eyes, nose, throat and lungs. Inhalation of concentrated vapors may cause serious damage to the lining membranes of the nose, throat and lungs. Other symptoms may include severe damage to the skin and severe eye damage which may result in loss of sight. Repeated or prolonged exposure may cause darkening of the skin, erosion of exposed front teeth, and chronic inflammation of the nose, throat and bronchi. Exposure to 50 ppm or more is intolerable to most persons and results in intense lacrimation and irritation of the eyes, nose and throat with pharyngeal edema and chronic bronchitis. Unacclimatized individuals experience extreme eye and nasal irritation at concentrations of 25 ppm. Conjunctivitis from concentrations below 10 ppm has been reported. Eye contact may result in permanent opacification of the cornea, severe iritis, small pupils fixed by posterior synechias, photophobia, hyperemia of the conjunctiva, inflammation and permanent corneal anesthesia. Ingestion of this compound may cause severe corrosion of the mouth and gastrointestinal tract with vomiting, hematemesis, diarrhea, circulatory collapse, uremia and death. Ingestion may also cause severe pain in the mouth, throat and abdomen; and to the formation of white plaques and ulcers on the mucous membranes. Hoarseness, rapid and shallow respiration, and low body temperature may develop. Ingestion of as little as 1.0 mL of this compound has caused perforation of the esophagus. It may later cause strictures of the esophagus and pylorus. The vapors are capable of producing bronchial constriction. Other results of ingestion include bloody vomiting, shock, hemolysis and hemoglobinuria

Safety Data Sheet

LCMS Grade Formic Acid

followed by anuria. Bronchopneumonia and pulmonary edema may develop following acute overexposure. Chronic exposure may result in pharyngitis and catarrhal bronchitis [346]. Delayed breathing difficulties may occur. Skin contact may result in hyperkeratotic dermatitis. Other symptoms include coughing and chest pain. Contact with skin may cause second-degree burns after a few minutes of contact. It may also cause redness and skin sensitization.

Symptoms resulting from exposure to this compound include severe irritation of skin, eyes, and mucous membranes; lacrimation, increased nasal discharge, cough, throat discomfort, erythema and blistering. Others symptoms usually associated only with ingestion include salivation, vomiting, burning sensation in mouth, bloody vomiting, diarrhea, nausea and pain. In severe poisoning shock may occur, followed by breathing difficulties and kidney damage. It may cause severe burns [025]. Other symptoms include albuminuria and hematuria. It can also cause local necrosis [151]. Signs of fatal poisoning are decreased pulse rate and respiration; drop in blood pressure, cyanosis and ultimately death.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the chemical

When the temperature is above the flash point, flammable in the presence of an ignition source. Keep away from all heat sources, sparks, and open flames.

5.3 Special protective actions for fire-fighters

Wear a self-contained breathing apparatus when appropriate.

Further information

Carbon oxides formed in fire conditions.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

ACUTE/CHRONIC HAZARDS:

This compound causes severe burns. It is corrosive to skin and tissues. It can also cause lacrimation.

*MINIMUM PROTECTIVE CLOTHING:

If Tyvek-type disposable protective clothing is not worn during handling of this chemical, wear disposable Tyvek-type sleeves taped to your gloves.

*RECOMMENDED GLOVE MATERIALS:

GlovES Expert System Recommended Gloves For Use With Neat (Undiluted) Chemical: This chemical has not been tested for permeation by Radian Corporation; however, the GlovES expert system was used to extrapolate permeation test information from compounds in the same chemical class and the following recommendation(s) are provided. The GlovES system uses permeation data from literature sources; therefore, extra safety margins should be used with the recommended exposure times. If this chemical comes into contact with your glove, or if a tear, puncture or hole develops, remove them at once.

Suggested Glove Type Model Number Thickness Estimated Breakthrough

Neoprene Edmont 29-840 0.38 mm 360 min.

Nitrile Edmont 37-175 0.40 mm 360 min.

PVC Edmont PVC Unknown 360 min.

*RECOMMENDED RESPIRATOR:

When working with this chemical, wear a NIOSH-approved full face positive pressure supplied-air respirator or a self-contained breathing apparatus (SCBA).

*OTHER: Not available

Safety Data Sheet

LCMS Grade Formic Acid

*STORAGE PRECAUTIONS:

You should store this chemical under cool ambient temperatures, and keep it away from oxidizing materials.

*SPILLS AND LEAKAGE:

If you should spill this chemical, use absorbent paper to pick up all liquid spill material. Seal the absorbent paper, as well as any of your clothing which may be contaminated, in a vapor-tight plastic bag for eventual disposal. Wash any surfaces you may have contaminated with a soap and water solution. Do not reenter the contaminated area until the Safety Officer (or other responsible person) has verified that the area has been properly cleaned.

*DISPOSAL AND WASTE TREATMENT:

Not available

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

If you should spill this chemical, use absorbent paper to pick up all liquid spill material. Seal the absorbent paper, as well as any of your clothing which may be contaminated, in a vapor-tight plastic bag for eventual disposal. Wash any surfaces you may have contaminated with a soap and water solution. Do not reenter the contaminated area until the Safety Officer (or other responsible person) has verified that the area has been properly cleaned.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place (15 – 25 °C). Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

1. Formic Acid (CAS: 64-18-6)

STEL: 15 ppm (ACGIH)

2. Formic acid (CAS: 64-18-6)

REL (Inhalation): 5 ppm (NIOSH)

OSHA Annotated Table Z-1, www.osha.gov

3. Formic acid (CAS: 64-18-6)

PEL (Inhalation): 5 ppm, (ST) 10 ppm (Cal/OSHA)

OSHA Annotated Table Z-1, www.osha.gov

4. Formic acid (CAS: 64-18-6)

PEL (Inhalation): 9 mg/m³ (OSHA)

OSHA Annotated Table Z-1, www.osha.gov

5. Formic acid (CAS: 64-18-6)

PEL (Inhalation): 5 ppm (OSHA)

OSHA Annotated Table Z-1, www.osha.gov

8.2 Appropriate engineering controls

Use product in a well ventilated location, such as in a fume hood.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Safety Data Sheet

LCMS Grade Formic Acid

Pictograms



Eye/face protection

Use a face shield (minimum 8 inches) and government tested and approved safety goggles, such as NIOSH (US) or EN 166 (EU).

Skin protection

MINIMUM PROTECTIVE CLOTHING: If Tyvek-type disposable protective clothing is not worn during handling of this chemical, wear disposable Tyvek-type sleeves taped to your gloves. ***RECOMMENDED GLOVE MATERIALS:** GlovES Expert System Recommended Gloves For Use With Neat (Undiluted) Chemical: This chemical has not been tested for permeation by Radian Corporation; however, the GlovES expert system was used to extrapolate permeation test information from compounds in the same chemical class and the following recommendation(s) are provided. The GlovES system uses permeation data from literature sources; therefore, extra safety margins should be used with the recommended exposure times. If this chemical comes into contact with your glove, or if a tear, puncture or hole develops, remove them at once. Suggested Glove Type Model Number Thickness Estimated Breakthrough Neoprene Edmont 29-840 0.38 mm 360 min. Nitrile Edmont 37-175 0.40 mm 360 min. PVC Edmont PVC Unknown 360 min.

Body protection

Complete chemical protective suit is recommended. The personal protective equipment should be selected based upon the concentration and amount of chemical at work station.

Respiratory protection

RECOMMENDED RESPIRATOR: When working with this chemical, wear a NIOSH-approved full face positive pressure supplied-air respirator or a self-contained breathing apparatus (SCBA). [651]

Thermal hazards

Product is flammable. Keep away from fire and ignition sources.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance/form (physical state, color, etc.)	Liquid;
Odor	Faint Vinegar Odor
Odor threshold	data unavailable
pH	2.4 at 1.0 M
Melting point/freezing point	8.4
Initial boiling point and boiling range	100.7
Flash point	48
Evaporation rate	0.97
Flammability (solid, gas)	
Upper/lower flammability limits	
Vapor pressure	42 mm Hg @ 20 C
Vapor density	1.59 (Air = 1.0)
Relative density	1.220 @ 20 C
Solubility(ies)	Freely soluble in water
Partition coefficient: n-octanol/water	Log Pow = -0.54
Auto-ignition temperature	
Decomposition temperature	
Viscosity	1.22 cps @ 20 C
Explosive properties	
Oxidizing properties	

Safety Data Sheet

LCMS Grade Formic Acid

Other safety information

Crystallizes when cooled to about 10 C and does not completely re-melt until warmed to about 15°C

SECTION 10: Stability and reactivity

10.2 Chemical stability

The chemical is stable under normal storage conditions.

10.3 Possibility of hazardous reactions

Data unavailable.

10.4 Conditions to avoid

Avoid excessive heat exposure and proximity to sparks or open flames.

10.5 Incompatible materials

Strong oxidizing agents, Strong bases, permanganates, powdered metals, peroxides, metals, carbonates, phosphates, amines and alcohols.

10.6 Hazardous decomposition products

Carbon oxides

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

FORMIC ACID

LD50 Oral - Rat - 1,100 mg/kg

LD50 Inhalation - Rat - 4 h - 7.4 mg/L

LD50 Inhalation - Rat - 0.25 h - 15,000 mg/m³

Skin corrosion/irritation

Data unavailable

Serious eye damage/irritation

Rabbit - Eyes - Corrosive to eyes - Severe eye irritation

Respiratory or skin sensitization

Causes sensitivity to skin.

Germ cell mutagenicity

Data unavailable.

Carcinogenicity

IARC: Not identified as possible, probable or confirmed human carcinogen.

OSHA: Not identified as possible, probable or confirmed human carcinogen.

NTP: Not identified as possible, probable or confirmed human carcinogen.

ACGIH: Not identified as possible, probable or confirmed human carcinogen.

Reproductive toxicity

Data unavailable.

STOT-single exposure

Data unavailable.

STOT-repeated exposure

Safety Data Sheet

LCMS Grade Formic Acid

Data unavailable.

Aspiration hazard

Data unavailable.

SECTION 12: Ecological information

Toxicity

Toxicity to Fish: LC50, 46 - 100 mg/L at 96 h (Leuciscus idus, ie. Golden orfe)
34.2 mg/L at 48 h (Daphnia magna, ie. Water flea)

Persistence and degradability

Readily biodegradable, > 90 %

Bioaccumulative potential

Data unavailable

Mobility in soil

Data unavailable

Results of PBT and vPvB assessment

Data unavailable

SECTION 13: Disposal considerations

Disposal of the product

Generation of waste should be kept to a minimum when possible. Any waste generated should be recycled when possible. Please dispose any unused or used materials in accordance with applicable national, regional and local laws and regulations.

Disposal of contaminated packaging

Dispose of as unused product.

Waste treatment

This product should be disposed of by a licensed waste management professional. Disposal through incineration with afterburner scrubbing is recommended.

Sewage disposal

Product should not enter the sewer.

SECTION 14: Transport information

DOT (US)

UN Number: 1779

Class: 8 (3)

Packing Group: II

Proper Shipping Name: Formic Acid

Reportable quantity (RQ): 5,000 lbs

Marine pollutant: No

Poison inhalation hazard: No

IMDG

UN Number: 1779

Class: 8 (3)

Packing Group: II

EMS Number: F-E, S-C

Safety Data Sheet

LCMS Grade Formic Acid

Proper Shipping Name: FORMIC ACID

IATA

UN Number: 1779

Class: 8 (3)

Packing Group: II

Proper Shipping Name: Formic acid

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

SARA 302 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 311/312 Hazards

Fire Hazard, Chronic Health Hazard, Acute Health Hazard

SARA 313 Components

The following component is subject to reporting levels established by SARA Title III, Section 313: Formic acid, CAS# 64-18-6

Pennsylvania Right To Know Components

Chemical name: Formic acid

CAS number: 64-18-6

New Jersey Right To Know Components

Common name: FORMIC ACID

CAS number: 64-18-6

Massachusetts Right To Know Components

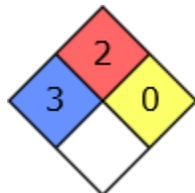
Chemical name: Formic acid

CAS number: 64-18-6

HMIS Rating

FORMIC ACID	
HEALTH	3
FLAMMABILITY	2
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

NFPA Rating



SECTION 16: Other information

16.1 Further information/disclaimer

The information represented in this Safety Data Sheet is believed to be correct and is based on the current state of our knowledge. This document or any other document does not represent or suggest any type of warranty or guarantee of the product properties or characteristics of this material. CovaChem, LLC and its affiliates shall not be held liable for any damages that result from contact with the above product or handling this product or any others.