We create chemistry

Safety Data Sheet
Formic acid 99%

1. Identification

Product identifier used on the label

Formic acid 99%

Recommended use of the chemical and restriction on use

Recommended use*: Chemical
Recommended use*: for industrial use only

* The “Recommended use” identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:
BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number
24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification
Molecular formula: CH(2)O(2)

2. Hazards Identification

According to Regulation 2024 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Flam. Liq.	3	Flammable liquids
Acute Tox.	3 (Inhalation - vapour)	Acute toxicity
Acute Tox.	4 (oral)	Acute toxicity
Skin Corr.	1A	Skin corrosion
Eye Dam.	1	Serious eye damage

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H226	Flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.
H331	Toxic if inhaled.
H302	Harmful if swallowed.

Precautionary Statements (Prevention):

P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing and eye protection or face protection.
P260	Do not breathe mist or vapour or spray.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243	Take action to prevent static discharges.
P241	Use explosion-proof electrical, ventilating and lighting equipment.
P270	Do not eat, drink or smoke when using this product.
P264	Wash contaminated body parts thoroughly after handling.
P240	Ground and bond container and receiving equipment.
P242	Use non-sparking tools.

Precautionary Statements (Response):

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or physician.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P363	Wash contaminated clothing before reuse.
P370 + P378	In case of fire: Use alcohol-resistant foam, carbon dioxide, dry powder or water spray for extinction.

Precautionary Statements (Storage):

P233	Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents/container in accordance with local regulations.

Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

Labeling of special preparations (GHS):
Corrosive to the respiratory tract.

3. Composition / Information on Ingredients

According to Regulation 2024 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Formic Acid
CAS Number: 64-18-6
Content (W/W): >= 99.0 - <= 100.0%
Synonym: No data available.

4. First-Aid Measures

Description of first aid measures

General advice:
First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

If on skin:
Wash affected areas with water while removing contaminated clothing. Remove contaminated clothing. Immediate medical attention required. Wash contaminated clothing before reuse.

If in eyes:
Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Immediate medical attention required.

If swallowed:
Rinse mouth and then drink 200-300 ml of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

Most important symptoms and effects, both acute and delayed

Symptoms: Overexposure may cause:, vomiting, aspiration pneumonia, circulatory collapse, death, acidosis, abdominal cramps, dyspnea, hypotension (low blood pressure), nausea, diarrhea, salivation
Hazards: No applicable information available.

Indication of any immediate medical attention and special treatment needed

Note to physician
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray, dry powder, alcohol-resistant foam, carbon dioxide

Unsuitable extinguishing media for safety reasons:
water jet

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
carbon monoxide,
The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

Impact Sensitivity:
Remarks: Based on the chemical structure there is no shock-sensitivity.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Breathing protection required. Avoid contact with the skin, eyes and clothing.

Environmental precautions

Do not empty into drains.

Methods and material for containment and cleaning up

For large amounts: Pump off product.
For residues: Pick up with suitable absorbent material (e.g. acid binder).

7. Handling and Storage

Precautions for safe handling

Ensure thorough ventilation of stores and work areas. Only use containers equipped with adequately sized pressure relief devices. Sealed containers should be protected against heat as this results in pressure build-up.

Protection against fire and explosion:
Sources of ignition should be kept well clear.

Conditions for safe storage, including any incompatibilities

Segregate from alkalies and alkalizing substances.

Suitable materials for containers: Stainless steel 1.4571, Stainless steel 1.4404, High density polyethylene (HDPE), Low density polyethylene (LDPE), glass, HDPE fluorinated

Storage stability:
Storage temperature: < 30 °C
Storage duration: <= 24 Months
The specified storage temperature is recommended to keep the decomposition rate low.
The indicated storage temperature is not safety-relevant.
The indicated temperature is only quality relevant.
From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

8. Exposure Controls/Personal Protection

Components with occupational exposure limits

Formic Acid	ACGIH, US:	TWA value 5 ppm ;
	OSHA Z1:	PEL 5 ppm 9 mg/m3 ;
	NIO ID, US:	IDLH 30 ppm ; IDLH values based on the 1994 Revised Criteria
	NIO ID, US:	LEL 18 % ;

Advice on system design:
Provide local exhaust ventilation to control vapours/mists.

Personal protective equipment

Respiratory protection:
Breathing protection if gases/vapours are formed. Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator. Do not exceed the maximum use concentration for the respirator facepiece/cartridge combination. For emergency or non-routine, high exposure situations, use a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Observe OSHA regulations for respirator use (29 CFR 1910.134).

Hand protection:
Chemical resistant protective gloves should be worn to prevent all skin contact., Suitable materials may include, chloroprene rubber (Neoprene), butyl rubber, fluoroelastomer (Viton), Consult with glove manufacturer for testing data., Protective glove selection must be based on the user's assessment of the workplace hazards.

Eye protection:
Tightly fitting safety goggles (chemical goggles) and face shield.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Avoid contact with the skin, eyes and clothing. Avoid inhalation of vapour. Avoid contact with skin and eyes. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g.

pinhole leaks). Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. Hands and/or face should be washed before breaks and at the end of the shift. When using, do not eat, drink or smoke.

9. Physical and Chemical Properties

Physical state:	liquid	
Form:	liquid	
Odour:	of formic acid, pungent odour	
Odour threshold:	not determined	
Colour:	colourless to yellow	
pH value:	2.2 (10 g/l, 20 °C)	
Melting point:	8 °C (1,013.25 hPa)	(OECD Guideline 102)
Freezing point:	No data available.	
Boiling point:	100.23 °C	(OECD Guideline 103)
Sublimation point:	No applicable information available.	
Flash point:	49.5 °C	(ISO 13736)
Flammability:	Flammable liquid and vapour.	(derived from flash point)
Lower explosion limit:	12 %(V) (43 °C)	
Upper explosion limit:	38 %(V) (43 °C)	
Autoignition:	528 °C	(DIN EN 14522)
SADT:	Study scientifically not justified.	
Vapour pressure:	42.71 mbar (20 °C) 54.96 mbar (25 °C) 170.7 mbar (50 °C)	(OECD Guideline 104) (OECD Guideline 104) (OECD Guideline 104)
Density:	1.2196 g/cm3 (20 °C) 1.1691 g/cm3 (55 °C) 1.2200 g/cm3 (15 °C) 1.1800 g/cm3 (50 °C)	(ISO 2811-3) (ISO 2811-3)
Relative density:	1.2195 (20 °C)	(OECD Guideline 109)
Relative vapour density:	> 1 (20 °C) Heavier than air.	(estimated)
Partitioning coefficient n-octanol/water (log Pow):	-2.1 (23 °C) -1.9 (23 °C) -2.3 (23 °C)	(Directive 92/69/EEC, A.8) (Directive 92/69/EEC, A.8) (Directive 92/69/EEC, A.8)
Self-ignition temperature:	Based on its structural properties the product is not classified as self-igniting.	

Thermal decomposition:	350 °C, 0.15 kJ/g (DSC (DIN 51007)) Thermal decomposition above the indicated temperature is possible. It is not a self-decompositionable substance.	
Viscosity, dynamic:	1.72 mPa.s (20 °C)	(calculated (from kinematic viscosity))
	1.17 mPa.s (40 °C)	(calculated (from kinematic viscosity))
	0.92 mPa.s (55 °C)	(calculated (from kinematic viscosity))
Viscosity, kinematic:	1.41 mm2/s (20 °C)	(DIN 51562)
	0.98 mm2/s (40 °C)	(DIN 51562)
	0.78 mm2/s (55 °C)	(DIN 51562)
Solubility in water:	(20 °C, 1,013.25 hPa) miscible	
Miscibility with water:	miscible in all proportions	
Solubility (quantitative):	No data available.	
Solubility (qualitative):	miscible in all proportions solvent(s): N,N-dimethylformamide, 1,4-dioxane, dichloromethane	
Molecular weight:	46.03 g/mol	
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.	

Particle characteristics
Particle size distribution: The substance / product is marketed or used in a non solid or granular form.

10. Stability and Reactivity

Reactivity
No applicable information available.

Corrosion to metals:
No corrosive effect on metal.

Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

Chemical stability
Slow decomposition possible.

Possibility of hazardous reactions
Exothermic reaction. Reacts with alkalies. Reacts with amines. The formation of gaseous decomposition products builds up pressure in tightly closed containers.

Conditions to avoid
Temperature: > 44 degrees Celsius
Upper temperature limit to avoid the formation of a flammable atmosphere.

Incompatible materials

amines
bases, non-coated metals, base metals

Hazardous decomposition products

Decomposition products:
Hazardous decomposition products: carbon monoxide
carbon dioxide

Thermal decomposition:
350 °C, 2.5 K/min (DSC (DIN 51007))
Thermal decomposition above the indicated temperature is possible. It is not a self-decompositionable substance.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity
Assessment of acute toxicity: Of moderate toxicity after single ingestion. Of pronounced toxicity after short-term inhalation.

Oral
Type of value: LD50
Species: rat (male/female)
Value: 730 mg/kg (OECD Guideline 401)

Inhalation
Type of value: LC50
Species: rat (male/female)
Value: 7.4 mg/l (BASF-Test)
Exposure time: 4 h
The vapour was tested.

Dermal
No data available. Study scientifically not justified.

Assessment other acute effects
Assessment of STOT single:
Corrosive to the respiratory tract.

Irritation / corrosion
Assessment of irritating effects: Highly corrosive! Damages skin and eyes.

Skin
Species: rabbit
Result: Corrosive.
Method: OECD Guideline 404
Literature data.

Eye
Study scientifically not justified. As the product corrodes the skin, it can be expected to have a similar effect on the eyes also.

Sensitization
Assessment of sensitization: Skin sensitizing effects were not observed in animal studies.

Buehler test
Species: guinea pig
Result: Non-sensitizing.
Method: OECD Guideline 406

Aspiration Hazard
No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity
Assessment of repeated dose toxicity: No substance-specific organtoxicity was observed after repeated administration to animals. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Genetic toxicity
Assessment of mutagenicity: No mutagenic effect was found in various tests with bacteria and mammalian cell culture. The substance was not mutagenic in an insect test. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Carcinogenicity
Assessment of carcinogenicity: In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Reproductive toxicity
Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility impairing effect. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Teratogenicity
Assessment of teratogenicity: No indications of a developmental toxic / teratogenic effect were seen in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

12. Ecological Information

Toxicity

Aquatic toxicity
Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.
The product gives rise to pH shifts.

Toxicity to fish
LC50 (96 h) 130 mg/l, Danio rerio (OECD 203; ISO 7346; 92/69/EWG, C.1, static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Aquatic invertebrates
EC50 (48 h) 365 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. The statement of the toxic effect relates to the analytically determined concentration.

Aquatic plants
EC50 (72 h) 1,240 mg/l (growth rate), Selenastrum capricornutum (OECD Guideline 201, static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

EC50 (72 h) 32.64 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9, static)
The details of the toxic effect relate to the nominal concentration. The product will cause changes in the pH value of the test system. The result refers to an unneutralized sample.

Chronic toxicity to fish
Study scientifically not justified.

Chronic toxicity to aquatic invertebrates
No observed effect concentration (21 d) >= 100 mg/l, Daphnia magna (OECD Guideline 211, semistatic)
The statement of the toxic effect relates to the analytically determined concentration. The product will cause changes in the pH value of the test system. The result refers to a neutralized sample. No effects at the highest test concentration.

Assessment of terrestrial toxicity
No data available.
Study scientifically not justified.

Soil living organisms

Toxicity to soil dwelling organisms:
Literature data.

Toxicity to terrestrial plants

Literature data.

Other terrestrial non-mammals
LD50 (18 h) >= 111 mg/kg, Agelaius phoeniceus
Literature data.

Microorganisms/Effect on activated sludge

Toxicity to microorganisms
OECD Guideline 209 aerobic
activated sludge, domestic, non-adapted/EC10 (3 h): > 500 mg/l
No effects at the highest test concentration. Nominal concentration.

Persistence and degradability

Assessment biodegradation and elimination (H2O)
Readily biodegradable (according to OECD criteria).

Elimination information

100 % DOC reduction (9 d) (OECD 301E/92/69/EWG, C.4-B) (aerobic, municipal sewage treatment plant effluent)

Assessment of stability in water
According to structural properties, hydrolysis is not expected/probable.

Information on Stability in Water (Hydrolysis)
$t_{1/2}$ > 5 d (50 °C, pH value 4), (Directive 92/69/EEC, C.7, pH 4)

$t_{1/2}$ > 5 d (50 °C, pH value 7), (Directive 92/69/EEC, C.7, pH 7)

$t_{1/2}$ > 5 d (50 °C, pH value 9), (Directive 92/69/EEC, C.7, pH 9)

Bioaccumulative potential

Assessment bioaccumulation potential
Significant accumulation in organisms is not to be expected.

Bioaccumulation potential
Significant accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments
The substance will not evaporate into the atmosphere from the water surface.
Adsorption to solid soil phase is not expected.

Additional information

Sum parameter

Chemical oxygen demand (COD): 348 mg/g

Biochemical oxygen demand (BOD) Incubation period 5 d: 86 mg/g

13. Disposal considerations

Waste disposal of substance:
Do not discharge into waterways or sewer systems without proper authorization. Dispose of in accordance with national, state and local regulations. Dispose of in a licensed facility.

Container disposal:
Dispose of container and any rinsate in an environmentally safe manner. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA: D001

D002

14. Transport Information

Land transport
USDOT

Hazard class:	8
Packing group:	II
ID number:	UN 1779
Hazard label:	8, 3
Proper shipping name:	FORMIC ACID

Sea transport
IMDG

Hazard class:	8
Packing group:	II
ID number:	UN 1779
Hazard label:	8, 3
Marine pollutant:	NO
Proper shipping name:	FORMIC ACID

Air transport
IATA/ICAO

Hazard class:	8
Packing group:	II
ID number:	UN 1779
Hazard label:	8, 3
Proper shipping name:	FORMIC ACID

15. Regulatory Information

Federal Regulations

Registration status:

Chemical	TSCA, US	released / listed
Biocide	TSCA, US	blocked / not listed
Crop Protection	TSCA, US	blocked / not listed

EPCRA 311/312 (Hazard categories): Refer to SDS section 2 for GHS hazard classes applicable for this product.

EPCRA 313:

CAS Number	Chemical name	Weight %
64-18-6	Formic Acid	>= 80.0000 - <= 100.0000 %

CERCLA RQ	CAS Number	Chemical name
5000 LBS	64-18-6	Formic Acid

State regulations

State RTK	CAS Number	Chemical name
PA	64-18-6	Formic Acid
NJ	64-18-6	Formic Acid

NFPA Hazard codes:
Health: 3 Fire: 2 Reactivity: 0 Special:

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Skin Corr.	1A	Skin corrosion
Flam. Liq.	3	Flammable liquids
Eye Dam.	1	Serious eye damage
Acute Tox.	4 (oral)	Acute toxicity
Acute Tox.	3 (Inhalation - vapour)	Acute toxicity

16. Other Information

SDS Prepared by:
BASF NA Product Regulations
SDS Prepared on: 2026/05/08

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