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Safety Data Sheet
Formic acid 85%

1. Identification

Product identifier used on the label

Formic acid 85%

Recommended use of the chemical and restriction on use
Recommended use*: industrial chemicals

* 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

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification
Molecular formula: CH(2)O(2)
Chemical family: carboxylic acid

2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

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

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H227	Combustible liquid.
H331	Toxic if inhaled.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.

Precautionary Statements (Prevention):

P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P261	Avoid breathing vapours.
P260	Do not breathe mist or vapour.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust or mist.
P270	Do not eat, drink or smoke when using this product.
P264	Wash with plenty of water and soap thoroughly after handling.

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 doctor/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/shower.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330	Rinse mouth.
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 to hazardous or special waste collection point.

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 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

CAS Number	Weight %	Chemical name
64-18-6	>= 85.0 - <= 86.0%	Formic Acid

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. Immediate medical attention required.

If in eyes:
In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

If swallowed:
Rinse mouth and then drink plenty 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: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

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

Special hazards arising from the substance or mixture
Hazards during fire-fighting:
carbon monoxide,
The substances/groups of substances mentioned can be released if the product is involved in a 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:
Keep people away and stay on the upwind side.

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
Contain spills and cover with absorbent material. Place into appropriately labeled waste containers. Remove containers to a safe place, cover loosely, and allow to stand for 24 to 48 hours before sealing and disposing.

7. Handling and Storage

Precautions for safe handling
Ensure thorough ventilation of stores and work areas. 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

Storage stability:
Storage temperature: < 30 °C
Storage duration: <= 36 Months
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	OSHA PEL	PEL 5 ppm 9 mg/m3 ; TWA value 5 ppm 9 mg/m3 ;
	ACGIH TLV	STEL value 10 ppm ; TWA value 5 ppm ;

Advice on system design:
Provide adequate exhaust ventilation to control work place concentrations.

Personal protective equipment

Respiratory protection:
Wear a NIOSH-certified (or equivalent) organic vapour respirator. Observe OSHA regulations for respirator use (29 CFR 1910.134).

Hand protection:
chloroprene rubber (Neoprene), butyl rubber, Protective glove selection must be based on the user's assessment of the workplace hazards., Consult with glove manufacturer for testing data.

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:
Contact with eyes and skin must be avoided. Avoid inhalation of vapour. Remove contaminated clothing immediately and dispose of safely. When using, do not eat, drink or smoke.

9. Physical and Chemical Properties

Form:	liquid	
Odour:	pungent odour	
Odour threshold:	not determined	
Colour:	colourless to yellow	
pH value:	2.2 (10 g/l, 20 °C)	
Melting point:	-13 °C	
Boiling point:	107.3 °C	
Sublimation point:	No applicable information available.	
Flash point:	65 °C	(DIN 51755)
Flammability:	Combustible liquid.	
Lower explosion limit:	14.9 %(V) 14.9 %(V) (57 °C)	
Upper explosion limit:	47.6 %(V)	
Autoignition:	500 °C	(DIN 51794)
Vapour pressure:	24.2 hPa (20 °C) 112.5 hPa (50 °C)	
Density:	1.195 g/cm3 (20 °C) 1.201 g/cm3 (15 °C) 1.173 g/cm3 (40 °C) 1.161 g/cm3 (50 °C) 1.15 g/cm3 (55 °C)	

Relative density:	No applicable information available.
Vapour density:	No applicable information available.
Partitioning coefficient n-octanol/water (log Pow):	-1.9 (23 °C)
Thermal decomposition:	No applicable information available.
Viscosity, dynamic:	1.70 mPa.s (20 °C) 0.92 mPa.s (55 °C)
Viscosity, kinematic:	1.42 mm2/s (20 °C) 0.8 mm2/s (55 °C)
Miscibility with water:	miscible in all proportions
Solubility (quantitative):	No applicable information available.
Solubility (qualitative):	miscible solvent(s): organic solvents,
Molar mass:	46.03 g/mol
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:
No corrosive effect on metal.

Chemical stability
Slow decomposition possible.

Possibility of hazardous reactions
Reacts with alkalies. Reacts with amines. Exothermic reaction.

Conditions to avoid
Temperature: > 30 degrees Celsius

Incompatible materials
bases, non-coated metals, base metals

Hazardous decomposition products

Decomposition products:
carbon dioxide, carbon monoxide

Thermal decomposition:
No applicable information available.

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. The toxicity of the product is based on its corrosivity.

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: 7.85 mg/l (BASF-Test)
Exposure time: 4 h

Dermal
Study scientifically not justified.

Assessment other acute effects
Assessment of STOT single:
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

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

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

Eye
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.
Caused sensitization in humans.

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: After repeated administration the prominent effect is the induction of corrosion.

Genetic toxicity
Assessment of mutagenicity: No mutagenic effect was found in various tests with bacteria and mammalian cell culture.
Genetic toxicity in vitro: Ames-test with and without metabolic activation negative
Cytogenetic assay with and without metabolic activation negative
Literature data.

Carcinogenicity
Assessment of carcinogenicity: The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. The results of various animal studies gave no indication of a carcinogenic effect.

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

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

Symptoms of Exposure

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

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. Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.
The product gives rise to pH shifts.

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

LC50 (96 h) 68 mg/l, Leuciscus idus (DIN 38412 Part 15, static)
The details of the toxic effect relate to the nominal concentration. After neutralization, it is no longer toxic.

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.

EC50 (48 h) 32.19 mg/l, Daphnia magna (Directive 79/831/EEC, 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.

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 aquatic invertebrates
No observed effect concentration (21 d) >= 102 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.

Microorganisms/Effect on activated sludge

Toxicity to microorganisms
other aerobic
activated sludge, domestic, non-adapted/EC10 (13 d): 72 mg/l

DIN EN ISO 8192 aerobic
activated sludge, industrial/EC20 (0.5 h): > 1,000 mg/l
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.

DIN 38412 Part 8 aerobic
bacterium/EC50 (17 h): 46.7 mg/l
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.

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/EEC, C.4-B) (aerobic, municipal sewage treatment plant effluent)

Bioaccumulative potential

Bioaccumulation potential
No significant accumulation in organisms is expected as a result of the distribution coefficient of n-octanol/water (log Pow).

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.

13. Disposal considerations

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

Container disposal:
RCRA empty containers may be landfilled at a licensed facility; other containers must be disposed of in a RCRA licensed facility. If containers are not empty, they must be disposed of in a RCRA-licensed facility. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

RCRA: U123
This product is regulated by RCRA.

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
Feed	TSCA, US	released / exempt

EPCRA 311/312 (Hazard categories): Acute; Chronic; Fire

EPCRA 313:

CAS Number	Chemical name
64-18-6	Formic Acid

CERCLA RQ	CAS Number	Chemical name
5000 LBS	64-18-6; 64-19-7	Formic Acid; Acetic 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./Irrit.	1B	Skin corrosion/irritation
Flam. Liq.	4	Flammable liquids
Eye Dam./Irrit.	1	Serious eye damage/eye irritation
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: 2017/07/31

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