



<b>MATERIALS SAFETY DATA SHEET (MSDS) Formic acid (HCOOH)</b>	<b>MSDS Number:</b>	
	<b>Version number:</b>	
	<b>Date issued:</b>	
	<b>Page No:</b>	

## 1. Product Identification

<b>Product Name</b>	Formic acid
<b>Synonyms</b>	Methanoic acid
<b>CAS No</b>	64-18-6
<b>Recommended Use</b>	Laboratory chemicals.
<b>Uses advised against</b>	Food, drug, pesticide or biocidal product use.

## Manufacturer/Importer/Supplier/Distributor information

Manufacturer Supplier	
E-Mail	Entity 1   Made by India
Contact Person	
Emergency Telephone	

## 2. Hazard(s) identification

### Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Acute oral toxicity	Category 4



Acute Inhalation Toxicity - Vapors	Category 3
Skin Corrosion/Irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1

Label Elements	
Signal word	Danger

**Hazard Statements**

- Flammable liquid and vapor
- Harmful if swallowed
- Causes severe skin burns and eye damage
- Toxic if inhaled

**Precautionary Statements**

<b>Prevention</b>	Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapors/spray. Wear protective gloves/protective clothing/eye protection/face protection. Keep away from heat/sparks/open flames/hot surfaces. - No smoking.Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep cool. Wear respiratory protection.
<b>Response</b>	Immediately call a POISON CENTER or doctor/physician
<b>Inhalation</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
<b>Skin</b>	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.



<b>Eyes</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>Ingestion</b>	Rinse mouth. DO NOT induce vomiting
<b>Fire</b>	In case of fire: Use CO2, dry chemical, or foam for extinction.
<b>Storage</b>	Store in a well-ventilated place. Keep container tightly closed Store locked up.
<b>Disposal</b>	Dispose of contents/container to an approved waste disposal plant.
<b>Hazards not otherwise classified (HNOC)</b>	Corrosive to the respiratory tract.

### 3. Composition and ingredient information

Chemical name	CAS number	%
Formic acid	64-18-6	99

### 4. First-aid measures

#### Description of first aid measures

<b>General notes</b>	Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness, place person in the recovery position. Never give anything by mouth.
<b>inhalation</b>	If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.
<b>skin contact</b>	Wash with plenty of soap and water.
<b>eye contact</b>	Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.
<b>ingestion</b>	Rinse mouth with water (only if the person is conscious). DO NOT induce vomiting.
<b>Most important symptoms and effects, both acute and delayed</b>	Symptoms and effects are not known to date.



<b>Indication of any immediate medical attention and special treatment needed</b>	None
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## 5. Fire-fighting measures

<b>Extinguishing media</b>	Suitable extinguishing media. Water spray, BC-powder, Carbon dioxide (CO <sub>2</sub> ). Unsuitable extinguishing media. Water jet.
<b>Special hazards arising from the substance or mixture</b>	In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. <b>Hazardous combustion products</b> Nitrogen oxides (NO <sub>x</sub> ), Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> )
<b>Advice for firefighters</b>	In case of fire and/or explosion do not breathe fumes. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

## 6. Accidental Release Measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Use personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
<b>Environmental precautions</b>	Should not be released into the environment. Do not flush into surface water or sanitary sewer system.
<b>Methods and material for containment and cleaning up</b>	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment

## 7. Handling and storage

<b>Handling</b>	Use only under a chemical fume hood. Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance.
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	Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges.
<b>Storage</b>	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame. Containers should be vented periodically in order to overcome pressure buildup. Store in explosion-proof refrigerator. Flammables area. Incompatible Materials. Strong oxidizing agents. Metals. Finely powdered metals. Strong bases.

## 8. Exposure Controls/ Personal Protection

### Control parameters Exposure Guidelines

Ingredient name	Exposure limits
Formic acid	<p><b>ACGIH TLV</b></p> <p>TWA: 5 ppm</p> <p>STEL: 10 ppm</p> <p><b>OSHA PEL</b></p> <p>(Vacated) TWA: 5 ppm</p> <p>(Vacated) TWA: 9 mg/m<sup>3</sup></p> <p>TWA: 5 ppm</p> <p>TWA: 9 mg/m<sup>3</sup></p> <p><b>NIOSH</b></p> <p>IDLH: 30 ppm</p> <p>TWA: 5 ppm</p> <p>TWA: 9 mg/m<sup>3</sup></p>

### Legend

**ACGIH** - American Conference of Governmental Industrial Hygienists

**OSHA** - Occupational Safety and Health Administration

**NIOSH**: NIOSH - National Institute for Occupational Safety and Health

<b>Engineering Measures</b>	Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment. Ensure adequate ventilation, especially in confined areas.
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<b>Personal Protective Equipment</b>	
<b>Eye/face Protection</b>	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Tight sealing safety goggles. Face protection shield.
<b>Skin and body protection</b>	Chemical resistant apron. Boots. Chemical protection suit (EN 14605).
<b>Respiratory Protection</b>	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
<b>Hygiene Measures</b>	Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

### Information on basic physical and chemical properties

<b>Physical state</b>	liquid
<b>Colour</b>	Colourless
<b>Odour</b>	Stinging
<b>Melting point/freezing point</b>	4 °C Method: OECD Test Guideline 102
<b>Boiling point/boiling range</b>	ca. 100.4 °C at 1.013 hPa Method: OECD Test Guideline 103
<b>Lower and upper explosion limit</b>	Lower explosion limit 12 %(V) 42 °C Upper explosion limit 38 %(V) No data available
<b>Flash point</b>	49.5 °C
<b>pH</b>	Acidic
<b>Viscosity, kinematic</b>	1.41 mm <sup>2</sup> /s at 20 °C
<b>Solubility(ies) :</b>	Water solubility : Soluble
<b>Partition coefficient: noctanol/water</b>	No data available
<b>Vapour pressure</b>	42 hPa at 20 °C Method: OECD 104



<b>Density and / or relative density</b>	1.22 g/cm <sup>3</sup> at 20 °C Method: OECD Test Guideline 109
<b>Relative vapour density</b>	No data available
<b>Particle characteristics</b>	No data available
<b>Evaporation rate</b>	No data available

## 10. Stability and reactivity

<b>Reactive Hazard</b>	None known, based on information available
<b>Stability</b>	Strong reducing agent. Fire and explosion risk in contact with oxidizing agents. Hygroscopic. heat sensitive. Decomposes to water and carbon dioxide.
<b>Conditions to Avoid</b>	Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moist air or water.
<b>Incompatible Materials</b>	Strong oxidizing agents, Metals, Finely powdered metals, Strong bases.
<b>Hazardous Decomposition Products</b>	Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), Hydrogen, Thermal decomposition can lead to release of irritating gases and vapors.
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.
<b>Hazardous Reactions</b>	None under normal processing.

## 11. Toxicological information

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### Information on toxicological effects

#### Acute toxicity

<b>Assessment of acute toxicity</b>	Of moderate toxicity after single ingestion. Of pronounced toxicity after short-term inhalation
<b>Experimental/calculated data:</b>	LD50 rat (oral): 730 mg/kg (OECD Guideline 401) LC50 rat (by inhalation): 7.5 mg/l4 h (BASF-Test) (dermal): No data available. Study scientifically not justified.
<b>Irritation</b>	Assessment of irritating effects: Highly corrosive! Damages skin and eyes.



<b>Experimental/calculated data:</b>	<p>Skin corrosion/irritation rabbit: Corrosive. (OECD Guideline 404) Literature data. Serious eye damage/irritation: Study scientifically not justified. As the product corrodes the skin, it can be expected to have a similar effect on the eyes also.</p>
<b>Respiratory/Skin sensitization</b>	<p>Assessment of sensitization: Skin sensitizing effects were not observed in animal studies. Experimental/calculated data: Buehler test guinea pig: Non-sensitizing. (OECD Guideline 406)</p>
<b>Germ cell mutagenicity</b>	<p>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.</p>
<b>Carcinogenicity</b>	<p>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.</p>
<b>Reproductive toxicity</b>	<p>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.</p>
<b>Developmental toxicity</b>	<p>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.</p>
<b>Specific target organ toxicity (single exposure)</b>	<p>Assessment of STOT single: Corrosive to the respiratory tract</p>
<b>Repeated dose toxicity and Specific target organ toxicity (repeated exposure)</b>	<p>Assessment of repeated dose toxicity: No substance-specific organ toxicity 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.</p>
<b>Aspiration hazard</b>	<p>No aspiration hazard expected.</p>

## 12. Ecological information

### Toxicity

<b>Assessment of aquatic toxicity</b>	<p>There is a high probability that the product is not acutely harmful to aquatic organisms.</p>
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	<p>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.</p>
<b>Toxicity to fish</b>	<p>LC50 (96 h) 130 mg/l, Brachy danio rerio (OECD 203; ISO 7346; 92/69/EEC, C.1, static)</p> <p>The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.</p> <p>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.</p>
<b>Aquatic invertebrates</b>	<p>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.</p> <p>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.</p>
<b>Aquatic plants</b>	<p>EC50 (72 h) 1.240 mg/l (growth rate), Selena strum capricornutum (OECD Guideline 201, static)</p> <p>The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.</p> <p>EC50 (72 h) 32,64 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9, static) .</p> <p>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.</p>
<b>Microorganisms/Effect on activated sludge</b>	<p>EC10 (13 d) 72 mg/l, activated sludge, domestic, non-adapted (other, aerobic)</p>



<b>Chronic toxicity to fish</b>	Study scientifically not justified.
<b>Chronic toxicity to aquatic invertebrates</b>	No observed effect concentration (21 d) >= 100 mg/l, Daphnia magna (OECD Guideline 211, semi static) 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.
<b>Assessment of terrestrial toxicity</b>	No data available. Study scientifically not justified.
<b>Other terrestrial non-mammals</b>	LD50 (18 h) >= 111 mg/kg, Agelaius phoeniceus Literature data
<b>Persistence and degradability</b>	<b>Assessment biodegradation and elimination (H2O):</b> Readily biodegradable (according to OECD criteria). <b>Elimination information:</b> 100 % DOC reduction (9 d) (OECD 301E/92/69/EEC, C.4-B) (aerobic, municipal sewage treatment plant effluent) <b>Assessment of stability in water:</b> According to structural properties, hydrolysis is not expected/probable. Information on Stability in Water (Hydrolysis): t1/2 > 5 d (50 °C, pH value 4), (Directive 92/69/EEC, C.7, pH 4) t1/2 > 5 d (50 °C, pH value 7), (Directive 92/69/EEC, C.7, pH 7) t1/2 > 5 d (50 °C, pH value 9), (Directive 92/69/EEC, C.7, pH 9)
<b>Bio accumulative potential</b>	<b>Bioaccumulation potential:</b> Significant accumulation in organisms is not to be expected.
<b>Mobility in soil</b>	<b>Assessment transport between environmental compartments:</b> <b>Volatility:</b> The substance will not evaporate into the atmosphere from the water surface. <b>Adsorption in soil:</b> Adsorption to solid soil phase is not expected.
<b>Results of PBT and vPvB assessment</b>	According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH):



	<p>Not fulfilling PBT (persistent/bio accumulative/toxic) criteria. Self-classification.</p> <p>According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): Not fulfilling vPvB (very persistent/very bio accumulative) criteria. Self classification.</p>
<b>Other adverse effects</b>	The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

### 13. Disposal considerations

#### Waste treatment methods:

<b>Waste from residues/unused products</b>	Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
<b>Contaminated packaging</b>	Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

### 14. Transport information

<b>DOT</b>	
<b>UN-No</b>	UN1779
<b>Proper Shipping Name</b>	FORMIC ACID
<b>Hazard Class</b>	8
<b>Subsidiary Hazard Class</b>	3
<b>Packing Group</b>	II

<b>TDG</b>	
<b>UN-No</b>	UN1779
<b>Proper Shipping Name</b>	FORMIC ACID
<b>Hazard Class</b>	8



<b>Subsidiary Hazard Class</b>	3
<b>Packing Group</b>	II

<b>IATA</b>	
<b>UN-No</b>	UN1779
<b>Proper Shipping Name</b>	FORMIC ACID
<b>Hazard Class</b>	8
<b>Subsidiary Hazard Class</b>	3
<b>Packing Group</b>	II

<b>IMDG</b>	
<b>UN-No</b>	UN1779
<b>Proper Shipping Name</b>	FORMIC ACID
<b>Hazard Class</b>	8
<b>Subsidiary Hazard Class</b>	3
<b>Packing Group</b>	II

## 15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or Mixture

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Basis	Value	Remarks
Directive 2012/18/EC Listed in Regulation : H2: ACUTE TOXIC Number in Regulation: 1.1.2	<b>Quantity:</b> 50.000 kg <b>Quantity:</b> 200.000 kg	
Directive 2012/18/EC Listed in Regulation : P5c: FLAMMABLE LIQUIDS Number in Regulation: 1.2.5.3	<b>Quantity:</b> 5.000.000 kg <b>Quantity:</b> 50.000.000 kg	



Substances of very high concern (SVHC)	This product does not contain substances of very high concern according to Regulation (EC) No Article 57 above the respective regulatory 1907/2006 (REACH), concentration limit of $\geq 0.1$ % (w/w).
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**VOC:**

Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control), 100 %

**16. Any other information**

**History**

Product name	
Product code	
Date of printing	
Date of issue/Date of Revision	
Date of previous issue	
Version	
Prepared by	

**17. Change Details**

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