

Formic acid

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830
Date of issue: 3/13/2019 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Substance name	: Formic acid
IUPAC name	: Formylic acid, Hydrogen carboxylic acid
EC Index-No.	: 607-001-00-0
EC-No.	: 200-579-1
CAS-No.	: 64-18-6
Product code	: 14501660
Formula	: CH ₂ O ₂
Product group	: Raw material

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category	: Laboratory use, Industrial use, Professional use
Industrial/Professional use spec	: For professional use only

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Safell Organics
Molekula Ltd
Lingfield Way
Darlington - England
T +44 (0) 1949 823777 / +44 (0) 7590 545705
info@molekula.com / kbowen@molekula.com - www.molekula.com

1.4. Emergency telephone number

Emergency number : +44 (0) 7590 545705

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable liquids, Category 3	H226
Acute toxicity (oral), Category 4	H302
Acute toxicity (inhal.), Category 3	H331
Skin corrosion/irritation, Category 1	H314
Full text of H statements : see section 16	
Specific concentration limits:	
(2 ≤ C < 10)	Skin Irrit. 2, H315
(2 ≤ C < 10)	Eye Irrit. 2, H319
(10 ≤ C < 90)	Skin Corr. 1B, H314
(C ≥ 90)	Skin Corr. 1A, H314

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS02

GHS05

GHS06

Signal word (CLP) : Danger

Hazard statements (CLP) :

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

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Precautionary statements (CLP)	: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P260 - Do not breathe mist, spray, vapours. P280 - Wear protective clothing, eye protection, face protection, protective gloves. P301+P312 - IF SWALLOWED: Call a POISON CENTRE or doctor if you feel unwell. P302+P352 - IF ON SKIN: Wash with plenty of soap and water. P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
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2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%
Formic acid	(CAS-No.) 64-18-6 (EC-No.) 200-579-1 (EC Index-No.) 607-001-00-0	100

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: If possible show this sheet, if not available show packaging or label. Do not leave affected person unattended. Never give anything by mouth to an unconscious person.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Give oxygen or artificial respiration if necessary. Get immediate medical advice/attention.
First-aid measures after skin contact	: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water. Do not remove clothing if it sticks to the skin. Get immediate medical advice/attention.
First-aid measures after eye contact	: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Remove contact lenses, if present and easy to do. Continue rinsing.
First-aid measures after ingestion	: Rinse mouth out with water. Get immediate medical advice/attention. Do not induce vomiting. Do not give an unconscious person anything to drink.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation	: Toxic if inhaled. Material is destructive to tissue of the mucuous membranes and upper respiratory tract. Cough, shortness of breath, headache, nausea. Symptoms may include dizziness, headache, nausea and loss of coordination. More severe symptoms are also possible.
Symptoms/effects after skin contact	: Causes severe burns. May produce skin irritation, blistering, ulcers, and deep scarring.
Symptoms/effects after eye contact	: Causes serious eye burns. Blurred vision. redness, itching, tears. stinging. More severe symptoms are also possible.
Symptoms/effects after ingestion	: Swallowing a small quantity of this material will result in serious health hazard. Burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. Ingestion may cause nausea, vomiting and diarrhea. More severe symptoms are also possible.

4.3. Indication of any immediate medical attention and special treatment needed

Get immediate medical advice/attention.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Dry powder. Sand.
Unsuitable extinguishing media	: Do NOT use water jet.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Flammable liquid and vapour.
Explosion hazard	: May form flammable/explosive vapour-air mixture.
Hazardous decomposition products in case of fire	: Carbon oxides (CO, CO ₂).

5.3. Advice for firefighters

Precautionary measures fire	: Exposure to fire/heat: seal off low-lying areas. Keep container tightly closed and away from heat, sparks and flame. Keep away from combustible materials.
Firefighting instructions	: Evacuate area. Eliminate all ignition sources if safe to do so. Fight fire from safe distance and protected location. Keep upwind.
Protection during firefighting	: Use self-contained breathing apparatus and chemically protective clothing.
Other information	: Warn all persons of toxic hazard.

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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures

: Do not handle until all safety precautions have been read and understood. Ventilate the area thoroughly, especially low lying areas (basements, workpits etc). Proper grounding procedures to avoid static electricity should be followed.

6.1.1. For non-emergency personnel

Protective equipment

: Wear recommended personal protective equipment.

Emergency procedures

: Do not touch or walk on the spilled product. Evacuate area. Mark out the contaminated area with signs and prevent access to unauthorized personnel. Do not breathe vapours. Do not get in eyes, on skin, or on clothing. Turn leaking containers leak-side up to prevent the escape of liquid.

Measures in case of dust release

: Shelter from vapours by keeping upwind. Special attention should be given to low areas/pits where flammable vapours can accumulate.

6.1.2. For emergency responders

Protective equipment

: Do not attempt to take action without suitable protective equipment. Use self-contained breathing apparatus and chemically protective clothing.

Emergency procedures

: All equipment used when handling the product must be grounded. Cover spill with non combustible material, e.g.: sand/earth. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Stop leak if safe to do so.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment

: Collect leaking and spilled liquid in sealable containers as far as possible. Contain the spilled material by bunding.

Methods for cleaning up

: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed

: Handle empty containers with care because residual vapours are flammable.

Precautions for safe handling

: Avoid contact with skin, eyes and clothing. Avoid formation of vapours. Do not handle until all safety precautions have been read and understood. Ensure that there is a suitable ventilation system. Do not handle in a confined space. Handle under inert gas.

Hygiene measures

: Take off immediately all contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Always wash hands after handling the product. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures

: Ensure adequate ventilation, especially in confined areas. Handle and store contents under inert gas. Protect from moisture. Proper grounding procedures to avoid static electricity should be followed.

Storage conditions

: Keep only in the original container in a cool, well ventilated place away from : Direct sunlight, Heat sources. Hygroscopic. Store contents under inert gas.

Incompatible products

: Strong bases. Strong oxidisers. Powdered metals.

Incompatible materials

: Sources of ignition. Direct sunlight. Heat sources. Water, humidity. Moisture.

Heat and ignition sources

: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Storage area

: Keep away from combustible materials. Store away from heat. Store in dry protected location to prevent any moisture contact. Store at ambient temperature.

Special rules on packaging

: Vent periodically.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Formic acid (64-18-6)		
United Kingdom	Local name	Formic acid
United Kingdom	WEL TWA (mg/m ³)	9.6 mg/m ³
United Kingdom	WEL TWA (ppm)	5 ppm
United Kingdom	Regulatory reference	EH40/2005 (Third edition, 2018). HSE

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8.2. Exposure controls

Appropriate engineering controls:

Handle in accordance with good industrial hygiene and safety procedures. Ensure exposure is below occupational exposure limits (where available). Floors should be impervious, resistant to liquids and easy to clean.

Personal protective equipment:

Avoid all unnecessary exposure. Wear recommended personal protective equipment.

Hand protection:

The protective gloves to be used must comply with the specifications of the regulation 2016/425 and the resultant standard EN 374. Always wash hands after handling the product

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Disposable gloves	Latex, Chloroprene rubber (CR)	6 (> 480 minutes)	0.6		EN 374

Eye protection:

Chemical goggles or face shield. Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Use eye protection according to EN 166, designed to protect against liquid splashes.

Type	Use	Characteristics	Standard
Face shield, Safety goggles	vapours, Droplet	tightly fitting safety goggles, With side shields	EN 166

Skin and body protection:

Emergency safety showers should be available in the immediate vicinity of any potential exposure. Keep suitable chemically resistant protective clothing readily available for emergency use

Type	Standard
Total impervious protective suits, gloves, and boots must be worn to prevent any contact with the product, Flame retardant antistatic protective clothing	EN 14605

Respiratory protection:

Keep self contained breathing apparatus readily available for emergency use. Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Wear appropriate mask

Device	Filter type	Condition	Standard
Air-Purifying Respirator (APR), reusable	ABEK	Mist formation, Moist condition, Protection for Liquid particles, Vapour protection	EN 14387

Other information:

Do not eat, drink or smoke when using this product. Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Molecular mass	: 46.03 g/mol
Colour	: Clear, colourless.
Odour	: No data available.
Odour threshold	: No data available
pH	: 2.2
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: 8.2 - 8.4 °C lit.
Freezing point	: No data available
Boiling point	: 100 - 101 °C lit.
Flash point	: 49.5 °C closed cup.
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: No data available
Relative vapour density at 20 °C	: 1.59
Relative density	: 1.22 g/cm ³ at 25 °C

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Solubility	: No data available
Log Pow	: 0.54
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Lower explosive limit (LEL)	: 18 vol %
Upper explosive limit (UEL)	: 57 vol %

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Flammable liquid and vapour.

10.2. Chemical stability

Flammable liquid and vapour. May form flammable/explosive vapour-air mixture.

10.3. Possibility of hazardous reactions

Stable under normal conditions of use.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks. Moisture. Water, humidity.

10.5. Incompatible materials

Strong bases. Strong oxidizers. Powdered metals.

10.6. Hazardous decomposition products

No hazardous decomposition products known at room temperature. Thermal decomposition generates : Carbon oxides (CO, CO₂).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Oral: Harmful if swallowed.
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Inhalation: Toxic if inhaled.

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LD50 oral rat	730 mg/kg
Skin corrosion/irritation	: Causes severe skin burns and eye damage. pH: 2.2
Additional information	: Based on available data, the classification criteria are not met
Serious eye damage/irritation	: Serious eye damage, category 1, implicit pH: 2.2
Additional information	: Based on available data, the classification criteria are not met
Respiratory or skin sensitisation	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Germ cell mutagenicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Reproductive toxicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
STOT-single exposure	: Not classified
Additional information	: Based on available data, the classification criteria are not met
STOT-repeated exposure	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Aspiration hazard	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Potential adverse human health effects and symptoms	: Harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity	: Not classified
Chronic aquatic toxicity	: Not classified

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Formic acid (64-18-6)	
EC50 Daphnia 1	34.2 mg/l Daphnia magna (Water flea) 48hr
EC50 other aquatic organisms 1	46.7 mg/l Pseudomonas putida (bacteria) 17hr
12.2. Persistence and degradability	
Formic acid (64-18-6)	
Persistence and degradability	No data available.
12.3. Bioaccumulative potential	
Formic acid (64-18-6)	
Log Pow	0.54
Bioaccumulative potential	No data available.
12.4. Mobility in soil	
No additional information available	
12.5. Results of PBT and vPvB assessment	
No additional information available	
12.6. Other adverse effects	
Additional information	: Avoid release to the environment.






SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations	: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
Additional information	: Handle empty containers with care because residual vapours are flammable.
Ecology - waste materials	: Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
1779	1779	1779	1779	1779
14.2. UN proper shipping name				
FORMIC ACID	FORMIC ACID	Formic acid	FORMIC ACID	FORMIC ACID
Transport document description				
UN 1779 FORMIC ACID (Formic acid), 8 (3), II, (D/E)	UN 1779 FORMIC ACID (Formic acid), 8 (3), II	UN 1779 Formic acid (Formic acid), 8 (3), II	UN 1779 FORMIC ACID (Formic acid), 8 (3), II	UN 1779 FORMIC ACID (Formic acid), 8 (3), II
14.3. Transport hazard class(es)				
8 (3)	8 (3)	8 (3)	8 (3)	8 (3)
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				
14.6. Special precautions for user				

Overland transport

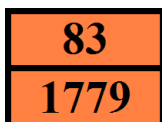
Classification code (ADR)	: CF1
Limited quantities (ADR)	: 1I
Excepted quantities (ADR)	: E2

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Packing instructions (ADR)	: P001, IBC02
Mixed packing provisions (ADR)	: MP15
Portable tank and bulk container instructions (ADR)	: T7
Portable tank and bulk container special provisions (ADR)	: TP2
Tank code (ADR)	: L4BN
Vehicle for tank carriage	: FL
Transport category (ADR)	: 2
Special provisions for carriage - Operation (ADR)	: S2
Hazard identification number (Kemler No.)	: 83
Orange plates	:



Tunnel restriction code (ADR)	: D/E
EAC code	: •2W
APP code	: A(fl)

Transport by sea

Packing instructions (IMDG)	: P001
IBC packing instructions (IMDG)	: IBC02
Tank instructions (IMDG)	: T7
Tank special provisions (IMDG)	: TP2
EmS-No. (Fire)	: F-E
EmS-No. (Spillage)	: S-C
Stowage category (IMDG)	: A
Stowage and handling (IMDG)	: SW2
Properties and observations (IMDG)	: Colourless flammable liquid with a pungent odour. Pure FORMIC ACID: flashpoint 42°C c.c. Corrosive to most metals. Causes burns to skin, eyes and mucous membranes.

Air transport

PCA Excepted quantities (IATA)	: E2
PCA Limited quantities (IATA)	: Y840
PCA limited quantity max net quantity (IATA)	: 0.5L
PCA packing instructions (IATA)	: 851
PCA max net quantity (IATA)	: 1L
CAO packing instructions (IATA)	: 855
CAO max net quantity (IATA)	: 30L
ERG code (IATA)	: 8F

Inland waterway transport

Classification code (ADN)	: CF1
Limited quantities (ADN)	: 1 L
Excepted quantities (ADN)	: E2
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP, EP, EX, A
Ventilation (ADN)	: VE01
Number of blue cones/lights (ADN)	: 1

Rail transport

Classification code (RID)	: CF1
Limited quantities (RID)	: 1L
Excepted quantities (RID)	: E2
Packing instructions (RID)	: P001, IBC02
Mixed packing provisions (RID)	: MP15
Portable tank and bulk container instructions (RID)	: T7
Portable tank and bulk container special provisions (RID)	: TP2
Tank codes for RID tanks (RID)	: L4BN
Transport category (RID)	: 2
Colis express (express parcels) (RID)	: CE6
Hazard identification number (RID)	: 83

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14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Formic acid is not on the REACH Candidate List

Directive 2012/18/EU (SEVESO III)

15.1.2. National regulations

Germany

Reference to AwSV

: Water hazard class (WGK) 1, Slightly hazardous to water (Classification according to AwSV; ID No. 210)

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV

: Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen

: The substance is not listed

SZW-lijst van mutagene stoffen

: The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding

: The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid

: The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling

: The substance is not listed

Denmark

Class for fire hazard

: Class II-1

Store unit

: 5 liter

Classification remarks

: R10 <H226;H302;H314;H331>; Emergency management guidelines for the storage of flammable liquids must be followed

Danish National Regulations

: Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment

No chemical safety assessment has been carried out for the substance or the mixture by the supplier

SECTION 16: Other information

Data sources

: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information

: None.

Full text of H- and EUH-statements:

Acute Tox. 3 (Inhalation)	Acute toxicity (inhal.), Category 3
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Flam. Liq. 3	Flammable liquids, Category 3
Skin Corr. 1	Skin corrosion/irritation, Category 1
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H331	Toxic if inhaled.

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.