	MATERIAL SAFETY DATA SHEET	MSDS No.	B-01
BloomchemAG	FORMIC ACID	Effective From	24.04.2021

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

1.1. Product identifier

Product Name **Formic Acid 85%**

Chemical Name **CAS No**
Formic acid 64-18-6

Synonyms

Pure substance/mixture Substance

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

Industrial Manufacture of substances. Formulation and (re)packing of substances and mixtures. Use in laboratories. Use as an intermediate. Use as a processing aid. Use in cleaning agents. Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers. Use in oil field drilling and production operations.

Professional Use in laboratories. Use as a processing aid. Use in cleaning agents.

Consumer Use in cleaning agents.

Application Chemical intermediate. Manufacture of textiles, leather, fur. Feed additive. Cleaning agent.

Uses advised against Not identified.

1.3. Details of the supplier of the safety data sheet

Company Name Bloomchemag BV
Address Sint-Antoniusstraat 16 b1 B-2400, Mol, Belgium
Telephone no. +9172919 74484 / 72919 74050
E-mail address info@bloomchemag.com

SECTION 2: Hazards identification

Hazards description

Inhalation: Inhalation of vapours may cause smarting pain in nose and throat, cough and hoarseness. Inhalation of high concentrations may also cause pulmonary oedema that may occur after several hours. Prolonged and repeated contact with vapours may cause inflammation in nose and throat, chronic bronchitis and dental corrosion.
Skin contact: Skin contact may cause severe burns with redness, smarting pain and wounds. Prolonged and repeated contact with vapours may cause calluses.
Eye contact: Splashes causes intensive pain and corneal burns. Risk of permanent eye damage. Vapours may be substantially irritating.
Ingestion: Ingestion may cause severe burns with burning pain, vomiting and eventually shock and kidney damage. Risk of permanent damage due to scarring of the esophagus and stomach.

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Acute toxicity - Oral Category 4 - (H302)

Acute toxicity - Inhalation (Vapours)	Category 3 - (H331)
Skin corrosion/irritation	Category 1 Sub-category B - (H314)
Serious eye damage/eye irritation	Category 1 - (H318)
EUH071 - Corrosive to the respiratory tract	

2.2. Label elements

Symbols/Pictograms

Signal word
Danger

Hazard statements
H331 - Toxic if inhaled
H314 - Causes severe skin burns and eye damage
H302 - Harmful if swallowed
EUH071 - Corrosive to the respiratory tract

Precautionary Statements
P280 - Wear protective clothing/eye protection
P260 - Do not breathe vapour
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
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
P310 - Immediately call a POISON CENTER or doctor

Contains: Formic acid 85%

2.3. Other hazards

Combustible liquid

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical Name	EC No	CAS No	REACH RegistrationNumber	Weight-%
Formic acid	200-579-1	64-18-6	01-2119491174-37-XXXX	84-86

Full text of H- and EUH-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice
Begin first-aid measures immediately!. Causes severe skin burns and eye damage. If unconscious place in recovery position and seek medical advice. First aider: Pay attention to self-protection. Emergency shower and eye wash facilities must exist in the work place.

Inhalation
Remove to fresh air. Call a doctor or poison control centre immediately. If experiencing respiratory symptoms:. Artificial respiration and/or oxygen may be necessary.

Skin contact
Wash off immediately with plenty of water for at least 15 minutes. Use lukewarm water if

	possible. Take off contaminated clothing. Seek immediate medical attention/advice.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Use lukewarm water if possible. Seek immediate medical attention/advice.
Ingestion	Do NOT induce vomiting. Clean mouth with water and drink plenty of water afterwards. Remove from exposure, lie down. Seek immediate medical attention/advice.

Self-protection of the first aider
Avoid any direct contact with the product.

4.2. Most important symptoms and effects, both acute and delayed
Inhalation: Inhalation of vapours may cause smarting pain in nose and throat, cough and hoarseness. Inhalation of high concentrations may also cause pulmonary oedema that may occur after several hours. Prolonged and repeated contact with vapours may cause inflammation in nose and throat, chronic bronchitis and dental corrosion. Skin contact: Skin contact may cause severe burns with redness, smarting pain and wounds Eye contact: Splashes causes intensive pain and corneal burns. Risk of permanent eye damage. Vapours may be substantially irritating. Ingestion: Ingestion may cause severe burns with burning pain, vomiting and eventually shock and kidney damage. Risk of permanent damage due to scarring of the esophagus and stomach.

4.3. Indication of any immediate medical attention and special treatment needed
Product is a corrosive material. Use of gastric lavage or emesis is contra-indicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal oedema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure Treat symptomatically

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media
Carbon dioxide (CO2). Extinguishing powder. Water spray (fog). Alcohol resistant foam.

Small Fire	Carbon dioxide (CO2). Extinguishing powder.
Large Fire	Alcohol resistant foam. Water spray (fog).

Unsuitable extinguishing media
High volume water jet.

5.2. Special hazards arising from the substance or mixture
In the event of fire and/or explosion do not breathe fumes. Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). The product causes burns of eyes, skin and mucous membranes. Vapours may form explosive mixture with air. Keep product and empty container away from heat and sources of ignition. Thermal decomposition can lead to release of irritating and toxic gases and vapours.

Hazardous combustion products
Carbon monoxide (CO), Carbon dioxide (CO2).

5.3. Advice for firefighters
Keep away from sources of ignition. Prevent fire fighting water from entering surface water or groundwater. Cool containers with spray water from a safe distance. Never use welding or cutting torch on or near container (even empty) because product may ignite explosively.

Additional information
Cool containers with flooding quantities of water until well after fire is out. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Remove all sources of ignition. Ensure adequate ventilation, especially in confined areas. Prevent further leakage or spillage if safe to do so.

6.2. Environmental precautions
Do not allow into any sewer, on the ground or into any body of water. Should not be released into the environment. Local authorities should be advised if significant spillages cannot be contained. Dilute with plenty of water. See Section 12 for additional ecological information.

6.3. Methods and material for containment and cleaning up

Methods for containment

Small spill	Dilute with water and wipe up or absorb with inert material.
Large spill	Dyke to collect large liquid spills. Pump up the product into a spare container suitably labelled.

Methods for cleaning up

Flush area with flooding quantities of water

6.4. Reference to other sections

See Section 7,8,13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Ensure adequate ventilation, especially in confined areas. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems. For details, see the separate exposure scenario(s).

General Hygiene Considerations

When using do not eat, drink or smoke. Take off all contaminated clothing and wash it before re-use.

7.2. Conditions for safe storage, including any incompatibilities

Keep tightly closed in a dry and cool place. Keep in properly labelled containers. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity).

7.3. Specific end use(s)

For details, see the separate exposure scenario(s).

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Keep personal exposure levels below Derived No Effect Level (DNEL) and national exposure limit values (if existing).

Chemical Name	European Union	United Kingdom
Formic acid 64-18-6	TWA: 5 ppm TWA: 9 mg/m³	TWA: 5 ppm TWA: 9.6 mg/m³ STEL: 15 ppm STEL: 28.8 mg/m³

Derived No Effect Level (DNEL) - worker

Formic acid (64-18-6)			
Type	Exposure route	DNEL	Remarks
Chronic effects, local	Inhalation	9.5	mg/m³
Chronic effects, systemic	Inhalation	9.5	mg/m³

Derived No Effect Level (DNEL) - Consumer

Formic acid (64-18-6)			
Type	Exposure route	DNEL	Remarks
Chronic effects, local	Inhalation	3	mg/m³
Chronic effects, systemic	Inhalation	3	mg/m³

Predicted No Effect Concentration (PNEC)

Formic acid (64-18-6)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks

Freshwater	2	mg/l
Freshwater sediment	13.4	mg/kg dry weight
Marine water	0.2	mg/l
Marine sediment	1.34	mg/kg dry weight
Impact on Sewage Treatment	7.2	mg/l
Soil	1.5	mg/kg dry weight

8.2. Exposure controls

Appropriate engineering controls

Emergency shower and eye wash facilities must exist in the work place. Ensure adequate ventilation, especially in confined areas. Comply with 2014/34/EU concerning equipment and protective systems intended for use in potentially explosive atmospheres and, Directive 1999/92/EC regarding minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres.

Individual protection measures, such as personal protective equipment

Eye/face protection: Tight sealing safety goggles. Face protection shield.

Hand Protection: Wear suitable gloves.

Duration of contact	material	Glove thickness	Break through time	Remarks
Suitable materials also with prolonged, direct contact (protective index 6, corresponding > 480 minutes of permeation time according to EN 374):	Chloroprene rubber, CR	=>0.55 mm	>480 min	
Suitable materials also with prolonged, direct contact (protective index 6, corresponding > 480 minutes of permeation time according to EN 374):	Butyl rubber	=>0.8 mm	> 480 min	

Skin and body protection: Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes).

Respiratory protection: Suitable respiratory protection for lower concentrations or short-term exposure:
Gas filter for gases/vapours of organic compounds (boiling point >65°C, e. g. Type A)
Suitable respiratory protection for higher concentrations or long-term exposure:
Self-contained breathing apparatus.

Environmental exposure controls

As no environmental hazard was identified no environmental-related exposure assessment and risk characterisation was performed.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

liquid
colourless

Odour: Pungent

Odour threshold: > 11 ppm

Property	Value	Remarks • Method
pH	-1.5	@ 20 °C
Melting point / freezing point	< -20 °C / -4 °F	
Boiling point / boiling range	107 °C / 225 °F	OECD Test No. 103: Boiling Point
Flash point	62 °C / 144 °F	ASTM (ASTM D 7094-04)
Evaporation rate		No information available
Flammability (solid, gas)		Not applicable
Explosive limits		
Upper explosive limits	48 Vol-%	
Lower explosive limits	15 Vol-%	
Vapour pressure	5.7 kPa	@25°C; litt.)
Vapour density		No information available
Relative density		No information available
Water solubility		@ 20 °C OECD Test No. 105: Water Solubility
Solubility(ies)		No information available
Partition coefficient	-0.6	log Pow (@20°C; OECD 107) Partition Coefficient (n-octanol/water)

Autoignition temperature	> 500 °C / 932 °F	(ASTM E 659-78)
Decomposition temperature		No information available
Kinematic viscosity		No information available
Dynamic viscosity	1.6 mPa s	(@20°C; ISO 3219)
Explosive properties		The product is not explosive. However, formation of explosive air/vapour mixtures are possible.
Oxidising properties		Not oxidising.
Density	1.19 g/cm3	(@20°C; ISO 2811-2)
Bulk density		Not applicable

9.2. Other information
No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity
The substance may act as a source for a formyl group or a hydride ion. Due to its high acidity, its solutions in alcohols form esters spontaneously. Formic acid has as well reducing properties and can reduce solutions of gold, silver, and platinum to the metals. Formic acid has ability to participate in addition reactions with alkenes. The substance and alkenes readily react to form formate esters.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
Vapours may form explosive mixture with air. Contact with metals may evolve flammable hydrogen gas. Reacts with: Strong bases, Oxidising substances. Mixtures with high formic acid content can decompose spontaneously and create overpressure and receptacle burst. Sunlight and heat will increase the risk of decomposition.

10.4. Conditions to avoid
Direct sunlight and heat.

10.5. Incompatible materials
Formic acid may react with alkalies and oxidizing materials such as peroxides, nitric acid, and chromic acid. It is also incompatible with concentrated sulphuric acid, nitromethane, finely powdered metals, permanganates, strong bases och oxidizing agents.

10.6. Hazardous decomposition products
Carbon monoxide (CO).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on likely routes of exposure
Inhalation. Dermal.

Symptoms related to the physical, chemical and toxicological characteristics
See Section 4 for more information.

Numerical measures of toxicity

Acute toxicity
Toxic by inhalation. Harmful if swallowed.

Formic acid (64-18-6)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 401: Acute Oral Toxicity	Rat	Oral	730	LD50 (lethal dose) mg/kg
OECD Test No. 402: Acute Dermal Toxicity	Mouse	Dermal	>2000	LD0 mg/kg
OECD Test No. 403: Acute Inhalation Toxicity	Rat	Inhalation	7.85	LC50 mg/l

Skin corrosion/irritation

Causes burns.

Formic acid (64-18-6)			
Method	Species	Exposure route	Results:
Unknown	human data	Dermal	Corrosive

Serious eye damage/eye irritation
Causes burns. Risk of serious damage to eyes.

Formic acid (64-18-6)			
Method	Species	Exposure route	Results:
Unknown	human data	Eye	strongly corrosive

Respiratory or skin sensitisation
No sensitising effects known.

Formic acid (64-18-6)			
Method	Species	Exposure route	Results:
OECD Test No. 406: Skin Sensitisation	Guinea pig	Skin	Not a skin sensitiser

Germ cell mutagenicity
Not mutagenic.

Formic acid (64-18-6)		
Method	Species	Results:
OECD Test No. 471: Bacterial Reverse Mutation Test	in vitro	Negative
OECD Test No. 473: In vitro Mammalian Chromosome Aberration Test	in vitro	Negative
OECD Test No. 476: In vitro Mammalian Cell Gene Mutation Test	in vitro	Negative
OECD Test No. 479: Genetic Toxicology: In vitro Sister Chromatid Exchange Assay in Mammalian Cells	in vitro	Negative
OECD Test No. 477: Genetic Toxicology: Sex-Linked Recessive Lethal Test in Drosophila melanogaster	in vivo	Negative

Carcinogenicity
There is no indication for any carcinogenic potential since all in vitro and in vivo mutagenicity studies are negative.

Formic acid (64-18-6)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 453: Combined Chronic Toxicity/Carcinogenicity Studies	Rat	Oral	2000	NOAEL mg/kg bw/d No carcinogenic effects have been observed. read-across from supporting substance (structural analogue)

Reproductive toxicity
No impairment of fertility has been observed. No embryotoxic or teratogenic effects have been observed.

Formic acid (64-18-6)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 414: Pre-natal Development Toxicity Study	Rabbit	Oral	667	NOAEL mg/kg bw/d No embryotoxic or teratogenic effects have been observed.

				read-across from supporting substance (structural analogue)
OECD Test No. 416: Two-Generation Reproduction Toxicity	Rat	Oral	650	NOAEL mg/kg bw/d A two-generation reproduction toxicity study performed with a read-across substance did not indicate any potential for reproductive or developmental toxicity.

STOT - single exposure

Formic acid (64-18-6)				
Method	Species	Exposure route	Effective dose	Remarks
Unknown	human data	Inhalation		May give smarting pain in nose and throat, headache, tiredness, dizziness and coughing. High concentration can give difficulties in breathing.

STOT - repeated exposure

Formic acid (64-18-6)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 453: Combined Chronic Toxicity/Carcinogenicity Studies	Rat	Oral	2000	LOAEL mg/kg bw/d read-across from supporting substance (structural analogue)
OECD Test No. 453: Combined Chronic Toxicity/Carcinogenicity Studies	Rat	Oral	400	NOAEL mg/kg bw/d read-across from supporting substance (structural analogue)
OECD Test No. 413: Sub-chronic Inhalation Toxicity: 90-day Study	Rat	Inhalation	0.244	LOAEL mg/l read-across from supporting substance (structural analogue)
OECD Test No. 413: Sub-chronic Inhalation Toxicity: 90-day Study	Rat	Inhalation	0.122	NOAEL mg/l read-across from supporting substance (structural analogue)
OECD Test No. 413: Sub-chronic Inhalation Toxicity: 90-day Study	Rat	Inhalation	0.244	NOAEL mg/l systemic toxicity read-across from supporting substance (structural analogue)

Aspiration hazard
No information available.

SECTION 12: Ecological information

12.1. Toxicity
Low toxicity to aquatic organisms.

Formic acid (64-18-6)					
Method	Species	Exposure route	Effective dose	Exposure time	Remarks
OECD Test No. 203: Fish, Acute Toxicity Test	Brachydanio rerio	Freshwater	130	96h	LC50 (lethal concentration) mg/l read-across from supporting substance

					(structural analogue)
OECD Test No. 202: Daphnia sp. Acute Immobilization Test	Daphnia magna	Freshwater	365	48h	EC50 (effective concentration) mg/l read-across from supporting substance (structural analogue)
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	Freshwater	1240	72h	EC50 (effective concentration) mg/l read-across from supporting substance (structural analogue)
OECD Test No. 203: Fish, Acute Toxicity Test	Brachydanio rerio	Freshwater	90	96h	NOEC mg/l read-across from supporting substance (structural analogue)
OECD Test No. 202: Daphnia sp. Acute Immobilization Test	Daphnia magna	Freshwater	180	48h	NOEC mg/l read-across from supporting substance (structural analogue)
OECD Test No. 211: Daphnia magna Reproduction Test	Daphnia magna	Freshwater	>=100	21d	NOEC mg/l
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	Freshwater	<76.8	72h	NOEC mg/l read-across from supporting substance (structural analogue)
Regulation (EC) No. 440/2008, Annex, C.3	Bacteria toxicity	Freshwater	72	13d	NOEC mg/l

12.2. Persistence and degradability

Readily biodegradable.

Formic acid (64-18-6)			
Method	Value	Exposure time	Results:
OECD Test No. 301C: Ready Biodegradability: Modified MITI Test (I) (TG 301 C)	100%	28d	Readily biodegradable
EU Method C.4-B	99%	11d	Readily biodegradable
EU Method C.4-B	98%	14d	Readily biodegradable

12.3. Bioaccumulative potential

Not bioaccumulable.

Chemical Name	**Partition coefficient**	**Bioconcentration factor (BCF)**
Formic acid	-2.1	

12.4. Mobility in soil

The product does not adsorb to suspended solids and sediment based upon the log Koc which indicates a high mobility in soil.

12.5. Results of PBT and vPvB assessment

This substance does not meet the criteria for classification as PBT or vPvB.

12.6. Other adverse effects

Emissions to water lowers the pH. This may cause local damage to fish and aquatic organisms in the discharge area.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products

The product is classified as hazardous waste and must be disposed of as such. Incinerate at a licensed installation.

Contaminated packaging

Thoroughly emptied and clean packaging may be recycled.

Waste codes / waste designations according to EWC / AVV

Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information

ADR Road transport

14.1 UN number	UN1779
14.2 UN proper shipping name	Formic acid
Proper Shipping Description	UN1779 Formic acid , 8 (3), II, (D/E)
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special precautions for user	None
Tunnel restriction code	(D/E)
Limited quantity (LQ)	1 L
ADR Hazard Id (Kemmler Number)	83

RID Rail transport

14.1 UN number	UN1779
14.2 UN proper shipping name	Formic acid
Proper Shipping Description	UN1779 Formic acid , 8 (3), II
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special precautions for user	None

IMDG Sea transport

14.1 UN number	UN1779
14.2 UN proper shipping name	Formic acid
Proper Shipping Description	UN1779 Formic acid , 8 (3), II
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing Group	II
14.5 Marine pollutant	Not applicable
14.6 Special precautions for user	None
EmS-No	F-E, S-C
Limited quantity (LQ)	1 L
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Y, S/P,3,2,G

IATA Air transport

14.1 UN number	UN1779
14.2 UN proper shipping name	Formic acid
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing Group	II

Proper Shipping Description UN1779 Formic acid , 8 (3), II
14.5 Environmental hazard Not applicable
14.6 Special precautions for user None
Limited quantity (LQ) 0.5 L
ERG Code 8L

SECTION 15: Regulatory information

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

International Regulations
Not applicable.

European Union

Take note of Directive 94/33/EC on the protection of young people at work
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Germany
Water hazard class (WGK) slightly hazardous to water (WGK 1)

TA Luft (German Air Pollution Control Regulation)

Chemical Name	Type	Class
Formic acid - 64-18-6	5.2.5	0.10 kg/h Mass flow (Class I); 20 mg/m³ Mass concentration (Class I) I

15.2. Chemical safety assessment
A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3
H226 - Flammable liquid and vapour
H314 - Causes severe skin burns and eye damage
H331 - Toxic if inhaled
H302 - Harmful if swallowed
EUH071 - Corrosive to the respiratory tract

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.