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

1.1. Product identifier

Product Name **ProSid™ FL 516**

Pure substance/mixture Mixture

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

Application Premixture

Uses advised against Not identified.

1.3. Details of the supplier of the safety data sheet

Manufacturer

Perstorp Waspik B.V.
Industrieweg 8
NL-5165 NH Waspik
The Netherlands
Tel. +31 (0)416 31 77 00
Fax: +31 (0)416 31 66 98
www.perstorp.com

E-mail address productinfo@perstorp.com

1.4. Emergency telephone number

Europe (+)1 760 476 3961 (contract no: 334101)

United Kingdom (+)44 8 08 189 0979 (contract no: 334101)

SECTION 2: Hazards identification

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 4 - (H332)
Skin corrosion/irritation	Category 1 Sub-category B - (H314)
Serious eye damage/eye irritation	Category 1 - (H318)
Specific target organ toxicity (single exposure)	Category 3 - (H335)
Specific target organ toxicity (repeated exposure)	Category 2 - (H373) Inhalation: Lungs.
Corrosive to metals	Category 1 - (H290)

EUH071 - Corrosive to the respiratory tract

2.2. Label elements

Symbols/Pictograms

Signal word

Danger

Hazard statements
H314 - Causes severe skin burns and eye damage
H373 - May cause damage to organs through prolonged or repeated exposure
H302 - Harmful if swallowed
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H290 - May be corrosive to metals
EUH071 - Corrosive to the respiratory tract

Precautionary Statements
P260 - Do not breathe vapour
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P310 - Immediately call a POISON CENTER or doctor

Contains: Formic acid 50-60%, Propionic acid 10-20%, Benzoic acid

2.3. Other hazards
None known

SECTION 3: Composition/information on ingredients

3.1 Substances
Not applicable

3.2 Mixtures

Chemical Name	EC No	CAS No	REACH registration number	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Formic acid	200-579-1	64-18-6	01-2119491174-37-0001	50-60	Flam. Liq. 3 (H226) Skin Corr. 1A (H314) Eye Dam. 1 (H318) Acute Tox. 3 (H331) Acute Tox. 4 (H302) (EUH071)
Propionic acid	201-176-3	79-09-4	01-2119486971-24-0002	10-20	Flam. Liq. 3 (H226) Skin Corr. 1B (H314) Eye Dam. 1 (H318) STOT SE 3 (H335)
Benzoic acid	200-618-2	65-85-0	No data available	1-<3	Skin Irrit. 2 (H315) Eye Dam. 1 (H318) STOT RE 1 (H372)

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 edema 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.

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

After cleaning, flush away traces with 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.

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)

This information is supplied in the present Safety Data Sheet.

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
Propionic acid 79-09-4	TWA 10 ppm TWA 31 mg/m³ STEL 20 ppm STEL 62 mg/m³	TWA: 10 ppm TWA: 31 mg/m³ STEL: 15 ppm STEL: 46 mg/m³

Derived No Effect Level (DNEL) - worker

Formic acid (64-18-6)			
Type	Exposure route	DNEL	Remarks
Acute effects, local	Inhalation	19	mg/m³
Chronic effects, local	Inhalation	9.5	mg/m³

Propionic acid (79-09-4)			
Type	Exposure route	DNEL	Remarks
Acute effects, local	Inhalation	62	mg/m³
Acute effects, systemic	Inhalation	62	mg/m³
Chronic effects, local	Inhalation	31	mg/m³
Chronic effects, systemic	Inhalation	31	mg/m³
Chronic effects, local	Dermal	260	µg/cm2
Chronic effects, systemic	Dermal	132	mg/kg bw/d

Benzoic acid (65-85-0)			
Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Inhalation	3	mg/m³
Chronic effects, local	Inhalation	0.1	mg/m³
Chronic effects, systemic	Dermal	62.5	mg/kg bw/d

Derived No Effect Level (DNEL) - Consumer

Formic acid (64-18-6)			
Type	Exposure route	DNEL	Remarks
Acute effects, local	Inhalation	9.5	mg/m³
Chronic effects, local	Inhalation	3	mg/m³

Benzoic acid (65-85-0)			
Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Inhalation	1.5	mg/m³
Chronic effects, local	Inhalation	0.06	mg/m³
Chronic effects, systemic	Dermal	31.25	mg/kg bw/d
Chronic effects, systemic	Oral	16.6	mg/kg bw/d

Predicted No Effect Concentration (PNEC)

Formic acid (64-18-6)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks
Freshwater	2	mg/l
Intermittent	1	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

Propionic acid (79-09-4)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks
Freshwater	0.5	mg/l
Intermittent	5	mg/l
Impact on Sewage Treatment	5	mg/l
Marine water	0.05	mg/l
Freshwater sediment	1.86	mg/kg dry weight
Marine sediment	0.186	mg/kg dry weight
Soil	0.1258	mg/kg dry weight

Benzoic acid (65-85-0)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks
Freshwater	0.34	mg/l
Marine water	0.34	mg/l
Intermittent	3.3	mg/l
Impact on Sewage Treatment	100	mg/l
Freshwater sediment	1.75	mg/kg dry weight
Marine sediment	1.75	mg/kg dry weight
Soil	0.151	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 Directive 94/9/EC 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
No information available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance
liquid
colourless or light yellow

Odour Pungent
Odour threshold No information available

Property	**Value**	**Remarks • Method**
pH	1.5 - 2.5	solution (5 %)
Melting point / freezing point		No information available
Boiling point / boiling range		Not determined
Flash point	>93 °C	
Evaporation rate		No information available
Flammability (solid, gas)		Not applicable
Explosive limits		
Upper explosive limits	48 Vol-%	85% Formic acid
Lower explosive limits	15 Vol-%	85% Formic acid
Vapour pressure	5.7 kPa	@25°C, 85% Formic acid
Vapour density		No information available
Relative density		No information available
Water solubility		Soluble in water
Solubility(ies)		No information available
Partition coefficient		See Section 12 for more information
Autoignition temperature		No information available
Decomposition temperature		Not determined
Kinematic viscosity		No information available
Dynamic viscosity		No information available
Explosive properties	The product is not explosive. However, formation of explosive air/vapour mixtures are possible.	
Oxidising properties		Not oxidising.
Density	1050-1150 kg/m³	@ 20 °C
Bulk density		Not applicable

9.2. Other information

No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity
There exists no specific test data for this product. For further information, see the subsequent subsections of this chapter.

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. Corrosive to metal.

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
Harmful if swallowed. Harmful if inhaled.

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	1,313.00 mg/kg
ATEmix (dermal)	7,857.00 mg/kg
ATEmix (inhalation-vapour)	15.00 mg/l
Acute oral toxicity	0 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
Acute dermal toxicity	15 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
Acute inhalation toxicity - Vapour	0 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapour)
Acute inhalation toxicity - dust/mist	67 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

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

Propionic acid (79-09-4)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 401: Acute	Rat	Oral	3455	LD50 (lethal dose)

Oral Toxicity				mg/kg
OECD Test No. 403: Acute Inhalation Toxicity	Rat	Inhalation	>20	Inhalation LC50 - 4 hour - vapour - mg/L

Benzoic acid (65-85-0)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 401: Acute Oral Toxicity	Mouse	Oral	2250	LD50 (lethal dose) mg/kg
Not defined	Rat	Inhalation	>12200	LC50 4h mg/m³
Not defined	Rabbit	Dermal	>2000	LD50 (lethal dose) mg/kg

Skin corrosion/irritation
Causes burns.

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

Propionic acid (79-09-4)			
Method	Species	Exposure route	Results:
Unknown	Rabbit	Dermal	Corrosive

Benzoic acid (65-85-0)			
Method	Species	Exposure route	Results:
Not defined	Guinea pig	Dermal	Irritating to skin

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

Propionic acid (79-09-4)			
Method	Species	Exposure route	Results:
Unknown	Rabbit	Eye	Corrosive

Benzoic acid (65-85-0)			
Method	Species	Exposure route	Results:
EU method B.5	Rabbit	Eye	Causes serious eye damage

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

Propionic acid (79-09-4)			
Method	Species	Exposure route	Results:
OECD Test No. 406: Skin Sensitisation	Guinea pig	Skin	Not a skin sensitiser

Benzoic acid (65-85-0)			
Method	Species	Exposure route	Results:
LLNA	Mouse	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

Propionic acid (79-09-4)		
Method	Species	Results:
OECD Test No. 471: Bacterial Reverse Mutation Test	in vitro	Negative
OECD Test No. 476: In vitro Mammalian Cell Gene Mutation Test	in vitro	Negative
OECD Test No. 473: In vitro Mammalian Chromosome Aberration Test	in vitro	Negative
OECD Test No. 474: Mammalian Erythrocyte Micronucleus Test	in vivo	Negative

Benzoic acid (65-85-0)		
Method	Species	Results:
OECD Test No. 471: Bacterial Reverse Mutation Test	Salmonella typhimurium	Negative
OECD 487	in vitro	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)

Propionic acid (79-09-4)				
Method	Species	Exposure route	Effective dose	Remarks
Unknown	Rat	Oral	4000	NOAEL ppm Animal studies have not shown any carcinogenic potential.

Benzoic acid (65-85-0)				
Method	Species	Exposure route	Effective dose	Remarks
Not defined	Rat	Oral	>1000	NOAEL mg/kg bw/d 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.

Propionic acid (79-09-4)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 414: Pre-natal Development Toxicity Study	Rat	Oral	300	NOAEL mg/kg bw/d read-across from supporting substance (structural analogue)

Benzoic acid (65-85-0)				
Method	Species	Exposure route	Effective dose	Remarks
Not defined	Rat	Oral	500	No impairment of fertility has been observed. No embryotoxic or teratogenic effects have been observed. read-across from supporting substance (structural analogue) mg/kg bw/d NOAEL 4 gen.

STOT - single exposure Corrosive to the respiratory tract

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.

Propionic acid (79-09-4)				
Method	Species	Exposure route	Effective dose	Remarks
		Inhalation		Irritating to respiratory system

Benzoic acid (65-85-0)				
Method	Species	Exposure route	Effective dose	Remarks
		Inhalation		Slightly irritating to the respiratory system.

STOT - repeated exposure

Causes damage to the following organs through prolonged or repeated exposure: Inhalation: Lungs.

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)

Propionic acid (79-09-4)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 408: Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	Oral	6200	NOAEL Chronic effects, local ppm
OECD Test No. 408: Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	Oral	50000	NOAEL systemic toxicity ppm
OECD Test No. 411: Sub-chronic Dermal Toxicity: 90-day Study	Mouse	Dermal	136.9	LOAEL Subchronic toxicity mg/kg bw/d

Benzoic acid (65-85-0)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 412: Sub-acute Inhalation Toxicity: 28-Day Study	Rat	Inhalation	250	NOAEL mg/m^3 systemic toxicity
OECD Test No. 412: Sub-acute Inhalation Toxicity: 28-Day Study	Rat	Inhalation	<25	NOAEL mg/m^3 Local health effects
EPA OPP 82-2	Rabbit	Dermal	>2500	NOAEL mg/kg

Aspiration hazard
No hazard from product as supplied.

SECTION 12: Ecological information

12.1. Toxicity
Low toxicity to aquatic organisms.

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment

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

Propionic acid (79-09-4)					
Method	Species	Exposure route	Effective dose	Exposure time	Remarks
DIN 38412	Leuciscus idus	Freshwater	>10000	96h	LC50 (lethal concentration) mg/l
Regulation (EC) No. 440/2008, Annex, C.2	Daphnia magna	Freshwater	>500	48h	EC50 (effective concentration) mg/l
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Scenedesmus subspicatus	Freshwater	>500	72h	EC50 (effective concentration) mg/l
DIN 38412	Leuciscus idus	Freshwater	>5000	96h	NOEC mg/l
Regulation (EC) No. 440/2008, Annex, C.2	Daphnia magna	Freshwater	250	48h	NOEC mg/l

Benzoic acid (65-85-0)					
Method	Species	Exposure route	Effective dose	Exposure time	Remarks
EPA-660/3-75-001	Lepomis macrochirus	Freshwater	44.6	96h	LC50 (lethal concentration) mg/l
EPA-660/3-75-009	Daphnia magna	Freshwater	>100	48h	LC50 (lethal concentration) mg/l
OECD Test No. 211: Daphnia magna Reproduction Test	Daphnia magna	Freshwater	>=25	21d	NOEC mg/l
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	Freshwater	>33.1	72h	EC50 (effective concentration) mg/l

12.2. Persistence and degradability
Based on the degradability studies on the ingredients, the product is expected to be 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

Propionic acid (79-09-4)			
Method	Value	Exposure time	Results:
Regulation (EC) No. 440/2008, Annex, C.5 (BOD)	93%	20d	Readily biodegradable
OECD Test No. 302B: Inherent Biodegradability: Zahn-Wellens/ EVPA Test	95%	10d	Readily biodegradable
Unknown	74%	30d	Readily biodegradable

Benzoic acid (65-85-0)			
Method	Value	Exposure time	Results:
OECD 311	>89%	21-35d	Readily biodegradable

12.3. Bioaccumulative potential
Based on the partition coefficients of the ingredients the product is not expected to bioaccumulate in organisms.

Chemical Name	**Partition coefficient**	**Bioconcentration factor (BCF)**
Formic acid	-2.1	
Propionic acid	0.33	
Benzoic acid	1.88	

12.4. Mobility in soil
The product is not expected to adsorb to a high degree to suspended solids and sediment based upon the log Pow.

12.5. Results of PBT and vPvB assessment
The components in this formulation do 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 from residues/unused products. 16 03 05*.

Other Information
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	UN3265
14.2 UN proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Proper Shipping Description	UN3265, Corrosive liquid, acidic, organic, n.o.s. (formic acid, propionic acid), 8, II, (E)
14.3 Transport hazard class(es)	8
Subsidiary hazard class	8
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special precautions for user	274
Tunnel restriction code	(E)
Limited quantity (LQ)	1 L
ADR Hazard Id (Kemmler Number)	80

RID Rail transport

14.1 UN number	UN3265
14.2 UN proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Proper Shipping Description	UN3265, Corrosive liquid, acidic, organic, n.o.s. (formic acid, propionic acid), 8, II
14.3 Transport hazard class(es)	8
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	UN3265
14.2 UN proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
Proper Shipping Description	UN3265, Corrosive liquid, acidic, organic, n.o.s. (formic acid, propionic acid), 8, II
14.3 Transport hazard class(es)	8
14.4 Packing Group	II
14.5 Marine pollutant	Not applicable
14.6 Special precautions for user	274
EmS-No	F-A, S-B
Limited quantity (LQ)	1 L
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	No information available

IATA Air transport

14.1 UN number	UN3265
14.2 UN proper shipping name	Corrosive liquid, acidic, organic, n.o.s.
14.3 Transport hazard class(es)	8
14.4 Packing Group	II
Proper Shipping Description	UN3265, Corrosive liquid, acidic, organic, n.o.s. (formic acid, propionic acid), 8, II
14.5 Environmental hazard	Not applicable
14.6 Special precautions for user	A3, A803
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 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
Take note of Directive 94/33/EC on the protection of young people at work
Comply with Directive 94/9/EC 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.
REGULATION (EC) No 1831/2003 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on additives for use in animal nutrition

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
Not applicable.

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
H318 - Causes serious eye damage
H331 - Toxic if inhaled
H302 - Harmful if swallowed
H315 - Causes skin irritation
H372 - Causes damage to organs through prolonged or repeated exposure if inhaled
H335 - May cause respiratory irritation
EUH071 - Corrosive to the respiratory tract

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Revision Note No information available

This safety data sheet complies with the requirements of: Regulation (EC) No. 1907/2006, COMMISSION REGULATION (EU) No. 830/2015 of 20 May 2015.

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.

End of Safety Data Sheet