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

1.1. Product identifier

Product Name **Goldfeed Welfare SW**

Pure substance/mixture Mixture

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

Application Complementary feed

Uses advised against Not identified.

1.3. Details of the supplier of the safety data sheet

Manufacturer

Schippers Europe B.V.
Rond Deel 12 5531 AH Bladel
The Netherlands
Tél.: 0031 (0) 497-382017
Fax: 0031 (0) 497-382096

E-mail address contact.nl@schippers.eu

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)
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
H332 - Harmful if inhaled

H302 - Harmful if swallowed
H335 - May cause respiratory irritation
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 40-50%, Lactic acid, Propionic acid 10-20%.

2.3. Other hazards
The components in this formulation do not meet the criteria for classification as PBT or vPvB.

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	40-50	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)
Lactic acid	200-018-0	50-21-5	01-2119548400-48	10-20	Skin Irrit. 2 (H315) Eye Dam. 1 (H318)
Sodium formate	205-488-0	141-53-7	01-2119486468-21-0000	5-10	Not classified

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.

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
Clean contaminated surface thoroughly. Collect spillage.

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
Chronic effects, local	Inhalation	9.5	mg/m³
Chronic effects, systemic	Inhalation	9.5	mg/m³

Propionic acid (79-09-4)			
Type	Exposure route	DNEL	Remarks
Acute effects, local	Inhalation	62	mg/m³
Chronic effects, local	Inhalation	31	mg/m³
Chronic effects, systemic	Inhalation	73	mg/m³
Chronic effects, systemic	Dermal	20.9	mg/kg bw/d

Lactic acid (50-21-5)			
Type	Exposure route	DNEL	Remarks
Acute effects, local	Inhalation	592	mg/m³
Chronic effects, local	Inhalation	592	mg/m³

Sodium formate (141-53-7)			
Type	Exposure route	DNEL	Remarks
Acute effects, local	Dermal	16.7	mg/cm 2

Acute effects, systemic	Dermal	5000	mg/kg bw/d
Chronic effects, systemic	Dermal	5000	mg/kg bw/d
Chronic effects, local	Dermal	16.7	mg/cm 2
Acute effects, systemic	Inhalation	350	mg/m³
Chronic effects, systemic	Inhalation	353	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

Propionic acid (79-09-4)			
Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Oral	10.5	mg/kg bw/d
Chronic effects, systemic	Inhalation	18.3	mg/m³
Acute effects, local	Inhalation	30.8	mg/m³
Chronic effects, local	Inhalation	3.7	mg/m³
Chronic effects, systemic	Dermal	10.5	mg/kg bw/d

Lactic acid (50-21-5)			
Type	Exposure route	DNEL	Remarks
Acute effects, local	Inhalation	296	mg/m³

Sodium formate (141-53-7)			
Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Oral	25	mg/kg bw/d
Acute effects, systemic	Inhalation	87	mg/m³
Chronic effects, systemic	Inhalation	87	mg/m³
Acute effects, local	Dermal	8.33	mg/cm 2
Acute effects, systemic	Dermal	2500	mg/kg bw/d
Chronic effects, local	Dermal	8.3	mg/cm 2
Chronic effects, systemic	Dermal	2500	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
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

Propionic acid (79-09-4)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks
Freshwater	0.5	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
Air		No hazard identified

Lactic acid (50-21-5)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks
Freshwater		No hazard identified

Marine water		No hazard identified
Impact on Sewage Treatment		No hazard identified
Freshwater sediment		No hazard identified
Marine sediment		No hazard identified
Soil		No hazard identified
Air		No hazard identified

Sodium formate (141-53-7)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks
Freshwater	2	mg/l
Intermittent	10	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	2.21	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
No information available.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance
liquid
colourless, yellow

Odour Pungent

Odour threshold No information available

Property	**Value**	**Remarks • Method**
pH	2.0 - 3.0	solution (5 %)

Melting point / freezing point		No information available
Boiling point / boiling range		Not determined
Flash point	>66 °C	
Evaporation rate		No information available
Flammability (solid, gas)		Not applicable
Explosive limits		
Upper explosive limits		No information available
Lower explosive limits		No information available
Vapour pressure		No information available
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		No information available
Density	1150-1250 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.

10.4. Conditions to avoid
Direct sunlight and heat.

10.5. Incompatible materials
Strong bases. Oxidising substances.

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

May be harmful if swallowed or if inhaled.

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

ATEmix (oral)	1,510.00 mg/kg
ATEmix (dermal)	6,545.00 mg/kg
ATEmix (inhalation-dust/mist)	90.00 mg/l
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	0 % 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	62 % 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 Oral Toxicity	Rat	Oral	3455	LD50 (lethal dose) mg/kg
OECD Test No. 403: Acute Inhalation Toxicity	Rat	Inhalation	>19.7	LC50 mg/l 1h vapor
OECD Test No. 402: Acute Dermal Toxicity	Rat	Dermal	3235	LD50 (lethal dose) mg/kg

Lactic acid (50-21-5)

Method	Species	Exposure route	Effective dose	Remarks
EPA OPP 81-1	Rat	Oral	3543	LD50 (lethal dose) mg/kg read-across from supporting substance (structural analogue)
EPA OPP 81-2	rabbit	Dermal	>2000	LD0 mg/kg read-across from supporting substance (structural analogue)
OECD Test No. 403: Acute Inhalation Toxicity	Rat	Inhalation	>7.94	LC50 mg/l read-across from supporting substance (structural analogue)

Sodium formate (141-53-7)

Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 420: Acute Oral Toxicity - Fixed Dose Procedure	Rat	Oral	3000	LD50 (lethal dose) mg/kg
OECD Test No. 402: Acute Dermal Toxicity	Rat	Dermal	>2000	LD50 (lethal dose) mg/kg
EPA OTS 798.1150	Rat	Inhalation	>0.67	LC0 mg/m^3 The maximal attainable dust concentration of 0.67 mg/l produced no signs of toxicity.

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

Lactic acid (50-21-5)			
Method	Species	Exposure route	Results:
EPA OPP 81-5	rabbit	Dermal	Irritating to skin read-across from supporting substance (structural analogue)

Sodium formate (141-53-7)			
Method	Species	Exposure route	Results:
OECD Test No. 404: Acute Dermal Irritation/Corrosion	rabbit	Dermal	Non-irritant

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

Lactic acid (50-21-5)			
Method	Species	Exposure route	Results:
Unknown	Eye in vitro	Eye	strongly irritant

Sodium formate (141-53-7)			
Method	Species	Exposure route	Results:
OECD Test No. 405: Acute Eye Irritation/Corrosion	rabbit	Eye	Non-irritant No classification according to GHS criteria.

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

Lactic acid (50-21-5)			
Method	Species	Exposure route	Results:
EPA OPP 81-6	Guinea pig	Skin	Not a skin sensitiser

Sodium formate (141-53-7)			
Method	Species	Exposure route	Results:
OECD Test No. 406: Skin Sensitisation	Guinea pig	Skin	Not a skin sensitiser read-across from supporting

			substance (structural analogue)

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 read-across from supporting substance (structural analogue)
OECD Test No. 479: Genetic Toxicology: In vitro Sister Chromatid Exchange Assay in Mammalian Cells	in vitro	Negative
OECD Test No. 474: Mammalian Erythrocyte Micronucleus Test	in vivo	Negative

Lactic acid (50-21-5)		
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

Sodium formate (141-53-7)		
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 read-across from supporting substance (structural analogue)
OECD Test No. 473: In vitro Mammalian Chromosome Aberration Test	in vitro	Negative read-across from supporting substance (structural analogue)
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	Rat	Oral	2000	NOAEL mg/kg bw/d No carcinogenic effects

Toxicity/Carcinogenicity Studies				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.

Sodium formate (141-53-7)				
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.

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)

Sodium formate (141-53-7)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 414: Pre-natal Development Toxicity Study	Rat	Oral	1000	NOAEL mg/kg bw/d No embryotoxic or teratogenic effects have been observed.
OECD Test No. 416: Two-Generation Reproduction Toxicity	rabbit	Oral	1000	NOAEL mg/kg bw/d No impairment of fertility has been observed. No embryotoxic or teratogenic effects have been observed.

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

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)

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
OECD Test No. 409: Repeated Dose 90-Day Oral Toxicity Study in Non-Rodents	Dog	Oral	733.4	NOAEL mg/kg bw/d

Sodium formate (141-53-7)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 408: Repeated Dose 90-Day Oral Toxicity Study in Rodents	Rat	Oral	3138	NOAEL mg/kg bw/d read-across from supporting substance (structural analogue)

Aspiration hazard
No hazard from product as supplied.

SECTION 12: Ecological information

12.1. Toxicity
Toxic to aquatic life with long lasting effects.

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 Immobilisation 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 Immobilisation 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

Lactic acid (50-21-5)					
Method	Species	Exposure route	Effective dose	Exposure time	Remarks
EPA-669/3-75-009	Oncorhynchus mykiss (rainbow trout)	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	250	48h	EC50 (effective concentration) mg/l
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	Freshwater	3500	72h	EC50 (effective concentration) mg/l

Sodium formate (141-53-7)					
Method	Species	Exposure route	Effective dose	Exposure time	Remarks
EPA OTS 797.1400	Oncorhynchus mykiss (rainbow trout)	Freshwater	>1000	96h	LC50 (lethal concentration) mg/l
EPA-660/3-75-009	Daphnia magna	Freshwater	>1000	48h	EC50 (effective concentration) mg/l
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	Freshwater	>1000	72h	EC50 (effective concentration) mg/l read-across from supporting substance (structural analogue)

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

Lactic acid (50-21-5)			
Method	Value	Exposure time	Results:
EU Method C.5	67%	20d	Readily biodegradable, failing

			10-d window

Sodium formate (141-53-7)			
Method	Value	Exposure time	Results:
OECD Test No. 306: Biodegradability in Seawater	86%	28d	Readily biodegradable
DIN EN 1899 BOD	3940	5d	mgO2/kg

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	
Lactic acid	-0.6	
Sodium formate	-1.8	

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
Contaminated packaging materials must be disposed of in the same manner as the product.

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 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
REGULATION (EC) No 767/2009 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the placing on the market and use of feed

France

Occupational Illnesses (R-463-3, France) Not applicable

Germany

Water hazard class (WGK) Water endangering class = 2 (self classification)

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
H315 - Causes skin irritation
H318 - Causes serious eye damage
H226 - Flammable liquid and vapour
H314 - Causes severe skin burns and eye damage
H331 - Toxic if inhaled
H302 - Harmful if swallowed
H335 - May cause respiratory irritation
EUH071 - Corrosive to the respiratory tract

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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
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End of Safety Data Sheet