

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**Product Name **ProPhorce™ Exclusive NC**

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**

Perstorp Waspik B.V.
Industrieweg 8
NL-5165 NH Waspik
The Netherlands
Tel. +31 (0)416 31 77 00
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

Skin corrosion/irritation

Serious eye damage/eye irritation

Skin sensitisation

Specific target organ toxicity (single exposure)

Category 4 - (H302)

Category 2 - (H315)

Category 1 - (H318)

Category 1B - (H317)

Category 3 - (H335)

2.2. Label elements**Symbols/Pictograms****Signal word**

Danger

Hazard statements

H302 - Harmful if swallowed
 H318 - Causes serious eye damage
 H315 - Causes skin irritation
 H317 - May cause an allergic skin reaction
 H335 - May cause respiratory irritation

Precautionary Statements

P261 - Avoid breathing dust/fume/gas/mist/vapours/spray
 P280 - Wear protective gloves and eye/face protection
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 P310 - Immediately call a POISON CENTER or doctor
 P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
 P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

Contains : Formic acid 25-35%, Propionic acid 5 - 15%, Cinnamaldehyde

2.3. Other hazards

Harmful to aquatic life; 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	25 - 35	Flam. Liq. 3 (H226) Skin Corr. 1A (H314) Eye Dam. 1 (H318) Acute Tox. 3 (H331) Acute Tox. 4 (H302) (EUH071)
Sodium formate	205-488-0	141-53-7	01-2119486468-21-0000	10 - 20	Not classified
Propionic acid	201-176-3	79-09-4	01-2119486971-24-0002	5 - 15	Flam. Liq. 3 (H226) Skin Corr. 1B (H314) Eye Dam. 1 (H318) STOT SE 3 (H335)
1,2,3-propanetriol, glycerol	200-289-5	56-81-5	No data available	5 - 10	Not classified
Cinnamaldehyde	203-213-9	104-55-2	01-2119935242-45-0001	1 - 5	Skin Irrit. 2 (H315) Skin Sens. 1B (H317) Eye Irrit. 2 (H319)

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

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	Emergency eyewash facilities must be located in the vicinity of where the product is handled.
Inhalation	Remove to fresh air. Rinse mouth with water. If irritation persists get medical advice/attention.
Skin contact	Immediately flush skin with water and rinse skin with soap and water for at least 5-10 minutes. Use lukewarm water if possible. Remove contaminated clothing and shoes. Get medical attention if redness does not disappear.
Eye contact	Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Use lukewarm water if possible. Keep eye wide open while rinsing.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink plenty of water afterwards. Never give anything by mouth to an unconscious person. If a large quantity has been ingested or you feel unwell, get medical advice/attention.

Self-protection of the first aider

Avoid contact with skin, eyes or clothing.

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

Eye contact: Causes severe irritation with flood of tears and pain and strong redness and swelling of the eye. Risk of permanent eye damage. May cause skin irritation and/or dermatitis. May cause allergic skin reaction.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Water spray, carbon dioxide (CO₂), dry chemical, alcohol-resistant foam.

Unsuitable extinguishing media

High volume water jet.

5.2. Special hazards arising from the substance or mixture

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

Wear self-contained breathing apparatus and protective suit.

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

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate affected area. Remove all sources of ignition.

6.2. Environmental precautions

Minimize the area spreading and cover the drains. Do not allow into any sewer, on the ground or into any body of water. Local authorities should be advised if significant spillages cannot be contained. See Section 12 for additional ecological information.

6.3. Methods and material for containment and cleaning up

Methods for containment

Small spill	Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal
Large spill	Pump up the product into a spare container suitably labelled.

Methods for cleaning up

Clean contaminated surface thoroughly. 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. Use personal protection recommended in Section 8. Avoid: aerosol or mist formation.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Keep from freezing. Store in a well-ventilated place. Protect from direct sunlight. Keep container tightly closed. 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/m ³	TWA: 5 ppm TWA: 9.6 mg/m ³ STEL: 15 ppm STEL: 28.8 mg/m ³
Propionic acid 79-09-4	TWA 10 ppm TWA 31 mg/m ³ STEL 20 ppm STEL 62 mg/m ³	TWA: 10 ppm TWA: 31 mg/m ³ STEL: 15 ppm STEL: 46 mg/m ³
1,2,3-propanetriol, glycerol 56-81-5	Not available	TWA: 10 mg/m ³ STEL: 30 mg/m ³

Derived No Effect Level (DNEL) - worker

Formic acid (64-18-6)

Type	Exposure route	DNEL	Remarks
Chronic effects, local	Inhalation	9.5	mg/m ³
Chronic effects, systemic	Inhalation	9.5	mg/m ³

Sodium formate (141-53-7)

Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Inhalation	35.26	mg/m ³
Chronic effects, systemic	Dermal	10	mg/kg bw/d
Local health effects	Eye	-	Low hazard (no threshold derived)

Propionic acid (79-09-4)

Type	Exposure route	DNEL	Remarks
Acute effects, local	Inhalation	62	mg/m ³
Chronic effects, local	Inhalation	31	mg/m ³
Chronic effects, systemic	Inhalation	73	mg/m ³
Chronic effects, systemic	Dermal	20.9	mg/kg bw/d

1,2,3-propanetriol, glycerol (56-81-5)

Type	Exposure route	DNEL	Remarks
Chronic effects, local	Inhalation	56	mg/m ³

Cinnamaldehyde (104-55-2)

Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Inhalation	13.6	mg/m ³
Chronic effects, systemic	Dermal	3.85	mg/kg bw/d

Derived No Effect Level (DNEL) - Consumer

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

Sodium formate (141-53-7)			
Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Inhalation	8.7	mg/m ³
Chronic effects, systemic	Dermal	5	mg/kg bw/d
Chronic effects, systemic	Oral	5	mg/kg bw/d
Local health effects	Eye	-	Low hazard (no threshold derived)

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/m ³
Acute effects, local	Inhalation	30.8	mg/m ³
Chronic effects, local	Inhalation	3.7	mg/m ³
Chronic effects, systemic	Dermal	10.5	mg/kg bw/d

1,2,3-propanetriol, glycerol (56-81-5)			
Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Oral	229	mg/kg bw/d
Chronic effects, local	Inhalation	33	mg/m ³

Cinnamaldehyde (104-55-2)			
Type	Exposure route	DNEL	Remarks
Chronic effects, systemic	Oral	1.37	mg/kg bw/d
Chronic effects, systemic	Inhalation	2.4	mg/m ³
Chronic effects, systemic	Dermal	1.37	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	

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	

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

1,2,3-propanetriol, glycerol (56-81-5)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks
Freshwater	0.885	mg/l
Marine water	0.088	mg/l
Impact on Sewage Treatment	1000	mg/l
Freshwater sediment	3.3	mg/kg dry weight
Marine sediment	0.33	mg/kg dry weight
Soil	0.141	mg/kg dry weight

Cinnamaldehyde (104-55-2)		
Environmental compartment	Predicted No Effect Concentration (PNEC)	Remarks
Freshwater	0.021	mg/l
Freshwater sediment	0.021	mg/kg dry weight
Marine water	0.002	mg/l
Marine sediment	0.002	mg/kg dry weight
Impact on Sewage Treatment	7.1	mg/l
Soil	0.004	mg/kg dry weight

8.2. Exposure controls

Appropriate engineering controls

Eyewash stations. Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Eye/face protection	Tight sealing safety goggles.
Hand Protection	Wear protective gloves. Butyl rubber. Chloroprene rubber, CR. Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves.
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	In case of insufficient ventilation, wear suitable respiratory equipment. 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 - brown

Odour Pungent
Odour threshold No information available

Property	Value	Remarks • Method
pH	3.0 - 4.0	solution (5 %)
Melting point / freezing point		No information available
Boiling point / boiling range		Not determined
Flash point	>93 °C	ASTM D7094-04
Evaporation rate		No information available

Flammability (solid, gas)		Not applicable
Explosive limits		No information available
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/m ³	@ 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

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

Thermal decomposition can lead to release of irritating and toxic gases and vapours.

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

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

ATEmix (oral)	1,820.10 mg/kg
ATEmix (dermal)	6,125.50 mg/kg

ATEmix (inhalation-dust/mist)	68.80 mg/l
ATEmix (inhalation-vapour)	24.60 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 - gas	65.37 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
Acute inhalation toxicity - Vapour	6 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapour)
Acute inhalation toxicity - dust/mist	50.15 % 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

Sodium formate (141-53-7)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 401: Acute Oral Toxicity	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.

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

1,2,3-propanetriol, glycerol (56-81-5)				
Method	Species	Exposure route	Effective dose	Remarks
Not defined	Mouse	Oral	>10000	LD50 (lethal dose) mg/kg
Not defined	Guinea pig	Dermal	>10000	LD50 (lethal dose) mg/kg
Not defined	Rat	Inhalation	>2.75	LC50 mg/l 4h

Cinnamaldehyde (104-55-2)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 401: Acute Oral Toxicity	Rat	Oral	2220	LD50 (lethal dose) mg/kg
OECD Test No. 402: Acute Dermal Toxicity	Rat	Dermal	>2000	LD50 (lethal dose) mg/kg
Method Acute dermal toxicity	rabbit	Dermal	<5000	LD100 mg/kg
QSAR (Quantitative Structure-Activity Relationship)	Not applicable	Inhalation	68.88	Inhalation LC50 - 4 hour - vapour - mg/L

Skin corrosion/irritation

Irritating to skin. Safety factor.

Product Information			
Method	Species	Exposure route	Results:
OECD Test No. 404: Acute Dermal Irritation/Corrosion	rabbit	Skin	Causes mild skin irritation Category 3 Read-across from similar product

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

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

Propionic acid (79-09-4)			
Method	Species	Exposure route	Results:
Other Guidelines	rabbit	Dermal	Corrosive Category 1B

1,2,3-propanetriol, glycerol (56-81-5)			
Method	Species	Exposure route	Results:
Not defined	Rabbit	Dermal	Non-irritant

Cinnamaldehyde (104-55-2)			
Method	Species	Exposure route	Results:
Unknown	human data	Dermal	Irritating to skin

Serious eye damage/eye irritation

Risk of serious damage to eyes.

Product Information			
Method	Species	Exposure route	Results:
OECD 438	in vitro		Causes serious eye damage Read-across from similar product

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

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.

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

1,2,3-propanetriol, glycerol (56-81-5)			
Method	Species	Exposure route	Results:
Not defined	Rabbit	Eye	Non-irritant

Cinnamaldehyde (104-55-2)			
Method	Species	Exposure route	Results:
OECD Test No. 405: Acute Eye Irritation/Corrosion	rabbit	Eye	Irritating to eyes

Respiratory or skin sensitisation

According to the data on the components: May cause sensitisation by skin contact.

Formic acid (64-18-6)			
------------------------------	--	--	--

Method	Species	Exposure route	Results:
OECD Test No. 406: Skin Sensitisation	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)

Propionic acid (79-09-4)

Method	Species	Exposure route	Results:
OECD Test No. 406: Skin Sensitisation	Guinea pig	Skin	Not a skin sensitiser

Cinnamaldehyde (104-55-2)

Method	Species	Exposure route	Results:
QSAR (Quantitative Structure-Activity Relationship)	Guinea pig	Skin	Skin sensitiser

Germ cell mutagenicity

According to the data on the components: 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 <i>Drosophila melanogaster</i>	in vivo	Negative

Sodium formate (141-53-7)

Method	Species	Results:
OECD Test No. 471: Bacterial Reverse Mutation Test	in vitro	Negative read-across from supporting substance (structural analogue)
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 <i>Drosophila melanogaster</i>	in vivo	Negative read-across from supporting substance (structural analogue)

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

1,2,3-propanetriol, glycerol (56-81-5)		
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
OECD Test No. 482: Genetic Toxicology: DNA Damage and Repair, Unscheduled DNA Synthesis in Mammalian Cells in vitro	in vitro	Negative

Cinnamaldehyde (104-55-2)		
Method	Species	Results:
Regulation (EC) No. 440/2008, Annex, B.13/14 (Ames test)	Salmonella typhimurium in vitro	Negative
QSAR (Quantitative Structure-Activity Relationship) In vitro Mammalian Chromosome Aberration Test	in vitro	Negative

Carcinogenicity

According to the data on the components. Animal studies have not shown any carcinogenic potential.

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)

Sodium formate (141-53-7)				
Method	Species	Exposure route	Effective dose	Remarks
OECD Test No. 453: Combined Chronic Toxicity/Carcinogenicity Studies	Mouse	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.

1,2,3-propanetriol, glycerol (56-81-5)				
Method	Species	Exposure route	Effective dose	Remarks
Not defined	Rat	Oral		No carcinogenic effects have been observed. 2 years

Cinnamaldehyde (104-55-2)				
Method	Species	Exposure route	Effective dose	Remarks
Not defined 2y	Rat	Oral	4100	NOAEL ppm

Reproductive toxicity

According to the data on the components: 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.

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

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)

1,2,3-propanetriol, glycerol (56-81-5)				
Method	Species	Exposure route	Effective dose	Remarks
Not defined	Rat	Oral	2000	NOAEL mg/kg bw/d

Cinnamaldehyde (104-55-2)				
Method	Species	Exposure route	Effective dose	Remarks
Unknown	Rat	Oral	5	LOAEL mg/kg bw/d
One-Generation Reproduction Toxicity Study	Rat	Oral	275	TDLo mg/kg
Unknown	Mouse	Oral	1200	NOAEL mg/kg bw/d No embryotoxic or teratogenic effects have been observed.

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.
--	--	--	--	----------------------------

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)

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)

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

1,2,3-propanetriol, glycerol (56-81-5)				
Method	Species	Exposure route	Effective dose	Remarks
Not defined	Rat	Oral	8000-10000	NOAEL mg/kg bw/d
Not defined	Rat	Inhalation	167	NOAEL mg/m ³

Cinnamaldehyde (104-55-2)				
Method	Species	Exposure route	Effective dose	Remarks

Unknown	Rat	Oral	4100	NOAEL ppm
Unknown 24w	Rat	Oral	35	TDLo mg/kg
Unknown 3d	Mouse	Dermal	750	TDLo mg/kg

Aspiration hazard

No information available.

SECTION 12: Ecological information**12.1. Toxicity**

Harmful to aquatic life.

0% of the mixture consists of component(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

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
Guideline other than OECD guideline	Pseudokirchneriella subcapitata	Freshwater	>1000	72h	EC50 (effective concentration) 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

1,2,3-propanetriol, glycerol (56-81-5)

Method	Species	Exposure route	Effective dose	Exposure time	Remarks
Not defined	Salmo gairdneri	Freshwater	54000	96h	LC50 (lethal concentration) mg/l
Not defined	Daphnia magna	Freshwater	>10000	24h	EC50 (effective concentration) mg/l
Not defined	Algae Scenedesmus quadricauda	Freshwater	>10000	8d	EC3 mg/l
Not defined	Pseudomonas putida	Freshwater	>10000	16h	NOEC mg/l

Cinnamaldehyde (104-55-2)

Method	Species	Exposure route	Effective dose	Exposure time	Remarks
Regulation (EC) No. 440/2008, Annex, C.1	Brachydanio rerio	Freshwater	4.15	96h	LC50 (lethal concentration) mg/l
OECD Test No. 202: Daphnia sp., Acute Immobilisation Test	Daphnia magna	Freshwater	3.21	48h	EC50 (effective concentration) mg/l
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Chlorella vulgaris	Freshwater	16.09	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

Sodium formate (141-53-7)

Method	Value	Exposure time	Results:
OECD Test No. 306: Biodegradability in Seawater	86%	28d	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

1,2,3-propanetriol, glycerol (56-81-5)			
Method	Value	Exposure time	Results:
Not defined	94%	24h	Readily biodegradable

Cinnamaldehyde (104-55-2)			
Method	Value	Exposure time	Results:
OECD Test No. 301B: Ready Biodegradability: CO2 Evolution Test (TG 301 B)	100%	28d	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	
Sodium formate	-1.8	
Propionic acid	0.33	
1,2,3-propanetriol, glycerol	-1.75	
Cinnamaldehyde	2.1	

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

This material and its container must be disposed of as hazardous waste.

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	Not regulated
14.2 UN proper shipping name	Not regulated
14.3 Transport hazard class(es)	Not regulated
Subsidiary class	-
14.4 Packing Group	Not regulated

14.5 Environmental hazard Not applicable
 14.6 Special precautions for user None

RID Rail transport

14.1 UN number Not regulated
 14.2 UN proper shipping name Not regulated
 14.3 Transport hazard class(es) Not regulated
 Subsidiary hazard class -
 14.4 Packing Group Not regulated
 14.5 Environmental hazard Not applicable
 14.6 Special precautions for user None

IMDG Sea transport

14.1 UN number Not regulated
 14.2 UN proper shipping name Not regulated
 14.3 Transport hazard class(es) Not regulated
 14.4 Packing Group Not regulated
 14.5 Marine pollutant Not applicable
 14.6 Special precautions for user None
 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information available

IATA Air transport Not regulated
 14.1 UN number Not regulated
 14.2 UN proper shipping name Not regulated
 14.3 Transport hazard class(es) Not regulated
 14.4 Packing Group Not regulated
 14.5 Environmental hazard Not applicable
 14.6 Special precautions for user None

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

International Regulations
 Not applicable.

European Union

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

Germany

Water hazard class (WGK)

Water endangering class = 1 (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/m ³ Mass concentration (Class 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

H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H319 - Causes serious eye irritation
H331 - Toxic if inhaled
H335 - May cause respiratory irritation
EUH071 - Corrosive to the respiratory tract

Issue Date 01-Jun-2020
Revision Date 01-Jun-2020
Revision Note SDS sections updated: 9

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

EUGB - BE