

Safety data sheet

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

1.1. Product identifier

Product Name Propionic Acid

Substance Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002

Pure substance/mixture Substance

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

Industrial Manufacture of substances. Transfer of substance or preparation (charging/discharging). Formulation of preparations (mixtures). Use in laboratories. Use in chemical processes. Use as an intermediate.

Professional Transfer of substance or preparation (charging/discharging). Use in laboratories. Use in animal nutrition. Use as a co-formulant in plant protection products.

Consumer Use in animal nutrition.

Application Chemical intermediate, Feed additive E280, 1k280

Uses advised against Not identified.

1.3. Details of the supplier of the safety data sheet

Manufacturer

Jorenku A/S
Teglvaerksvej 11
DK-4733 Tappernoeye
Denmark
Tel. +45 56 21 40 70
www.jorenku.dk

E-mail address jorenku@jorenku.dk

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

Hazards description

Inhalation: Inhalation of vapours may cause smarting pain in nose and throat, cough and hoarseness. Inhalation of high concentrations may also cause pulmonary oedema that may occur after several hours. Prolonged and repeated contact with vapours may cause inflammation in nose and throat, chronic bronchitis and dental corrosion.

Skin contact: Skin contact may cause severe burns with redness, smarting pain and wounds. Prolonged and repeated contact with vapours may cause calluses.

Eye contact: Splashes causes intensive pain and corneal burns. Risk of permanent eye damage. Vapours may be substantially irritating.

Ingestion: Ingestion may cause severe burns with burning pain, vomiting and eventually shock and kidney damage. Risk of permanent damage due to scarring of the esophagus and stomach.

JORENKU Propionic Acid

Jorenku A/S
Teglvaerksvej 11
DK-4733 Tappernoeye
Tel.: +45 56 21 40 70
jorenku@jorenku.dk
www.jorenku.dk

2.1. Classification of the substance or mixture

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

Skin corrosion/irritation

Serious eye damage/eye irritation

Specific target organ toxicity — single exposure

Flammable liquids

Category 1 Sub-category B - (H314)

Category 1 - (H318)

Category 3 - (H335)

Category 3 - (H226)

2.2. Label elements

Symbols/Pictograms



Signal word

Danger

Hazard statements

H226 - Flammable liquid and vapour

H314 - Causes severe skin burns and eye damage

H335 - May cause respiratory irritation

Precautionary Statements

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P260 - Do not breathe vapour

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor

Propionic acid

2.3. Other hazards

The substance is a flammable liquid and may form explosive air/vapour mixtures.

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

This product does not contain any known or suspected endocrine disruptors

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	EC No	REACH registration number	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
Propionic acid 'CAS #' 79-09-4	201-176-3	01-2119486971-24-0002	100	Flam. Liq. 3 (H226) Skin Corr. 1B (H314) Eye Dam. 1 (H318) STOT SE 3 (H335)	Eye Irrit. 2 :: 10% ≤ C < 25% Skin Corr. 1B :: C ≥ 25% Skin Irrit. 2 :: 10% ≤ C < 25% STOT SE 3 :: C ≥ 10%	No data available	No data available

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

[A] - Not classified, Data are conclusive but insufficient for classification

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

Acute Toxicity Estimate

If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

Chemical name	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapour - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Propionic acid 'CAS #:' 79-09-4	3455	3235	-	24.4	Not applicable

This product does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (Regulation (EC) No. 1907/2006 (REACH), Article 59)

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 contact with skin, eyes or clothing. Remove all sources of ignition.

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

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

Note to doctors	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.
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SECTION 5: Firefighting measures

5.1. Extinguishing media



Suitable Extinguishing Media	Carbon dioxide (CO ₂). Extinguishing powder. Water spray (fog). Alcohol resistant foam.
Small Fire	Carbon dioxide (CO ₂). Extinguishing powder.
Large Fire	Alcohol resistant foam. Water spray or fog.
Unsuitable extinguishing media	High volume water jet.

5.2. Special hazards arising from the substance or mixture

In the event of fire and/or explosion do not breathe fumes. Most vapours are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). The product causes burns of eyes, skin and mucous membranes. Vapours may form explosive mixtures 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 dioxide (CO₂). Carbon monoxide (CO).

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters 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

Personal precautions 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

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

6.3. Methods and material for containment and cleaning up

Methods for containment

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

Methods for cleaning up

Flush area with flooding quantities of water.

6.4. Reference to other sections

Reference to other sections See Section 7,8,13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on 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. All equipment used when handling the product must be grounded. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems. For details, see the separate exposure scenario(s).

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

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions 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)

Risk Management Methods (RMM) For details, see the separate exposure scenario(s).

Section 8 - EU - Great Britain

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
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

Derived No Effect Level (DNEL) - worker

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

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

Predicted No Effect Concentration

(PNEC)

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

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.

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):	Butyl rubber	=>0.7 mm	>480 min	
Suitable materials short-term contact and/or splashes (protective index 2, corresponding > 30 minutes of permeation time according to EN 374):	Nitrile rubber, NBR	=>0.4 mm	>30 min	
Suitable materials short-term contact and/or splashes (protective index 2, corresponding > 30 minutes of permeation time according to EN 374):	Chloroprene rubber, CR	=>0.5 mm	>30 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 Further information concerning special risk management measures: see annex of this safety data sheet (exposure scenarios).

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state Liquid
 Colour colourless
 Odour Pungent
 Odour threshold 0.026-0.17 ppm

Property	Values	Remarks • Method
Melting point / freezing point	< -20 °C / -4 °F	
Boiling point / boiling range	141 °C / 286 °F	OECD Test No. 103: Boiling Point
Flammability (solid, gas)		Not applicable
Explosive limits		
Upper explosive limits	12 %	
Lower explosive limits	2 %	
Flash point	51 °C / 124 °F	ASTM D 7094-04
Autoignition temperature	425 °C / 797 °F	ASTM E 659-78
Decomposition temperature		Not applicable
pH	2.5	@20°C (100 g/l)
Kinematic viscosity		No information available
Dynamic viscosity	1.2 mPa s	@20°C; ISO 3219

Explosive properties

Oxidising properties

Water solubility

Solubility(ies)

Partition coefficient

0.3

Vapour pressure

0.4 kPa

Vapour density

Relative density

Density

994 kg/m³

Bulk density

Particle characteristics

The product is not explosive. However, formation of explosive air/vapour mixtures are possible.

Not oxidising.

Miscible in water

No information available

log POW (@20°C; OECD 107) Partition

Coefficient (n-octanol/water)

@20°C; lit.

No information available

No information available

@ 20 °C

No information available

No information available

9.2.1. Information with regards to physical hazard classes

Explosives	Not applicable
Flammable gases	Not applicable
Aerosols	Not applicable
Oxidising gases	Not applicable
Gases under pressure	Not applicable
Flammable solids	
Burning Rate	Not applicable
Self-reactive substances and mixtures	Not applicable
Pyrophoric liquids	Not applicable
Pyrophoric solids	Not applicable
Self-heating substances and mixtures	Not applicable
Oxidising liquids	Not applicable
Oxidising solids	Not applicable
Oxidising properties	
Organic peroxides	Not applicable
Desensitised explosives	Not applicable

9.2.2. Other safety characteristics

No information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity

The substance may act as a source for a formyl group or a hydride ion. Due to its acidity, its solutions in alcohols form esters spontaneously. Propionate salts are formed by reaction with hydroxides of alkali metals.

10.2. Chemical stability

Stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Vapours may form explosive mixture with air. Reacts with alkalis. Oxidising substances. Corrosive substances in contact with metals may produce flammable hydrogen gas.

10.4. Conditions to avoid

Conditions to avoid

No information available.

10.5. Incompatible materials

Incompatible materials

Alkali. Oxidising substances.

10.6. Hazardous decomposition products



Hazardous decomposition products Hydrogen, Flammable gases, In case of fire.: Carbon oxides.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Information on likely routes of exposure

Inhalation. Dermal.

Symptoms related to the physical, chemical and toxicological characteristics

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.

Numerical measures of toxicity

Acute toxicity May be harmful if swallowed. May be harmful in contact with skin.

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. 402: Acute Dermal Toxicity	Rat	Dermal	3235	LD50 (lethal dose) mg/kg
OECD Test No. 403: Acute Inhalation Toxicity	Rat	Inhalation, Vapour	>19.7	LC0 /1h, mg/l
OECD Test No. 403: Acute Inhalation Toxicity	Rat	Inhalation, Vapour	24.4	LC0 /8h, mg/l

Skin corrosion/irritation Causes burns.

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

Serious eye damage/eye irritation Causes burns.

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

Respiratory or skin sensitisation 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

Germ cell mutagenicity Not mutagenic.

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

Carcinogenicity Animal studies have not shown any carcinogenic potential. There is no indication for any carcinogenic potential since all in vitro and in vivo mutagenicity studies are negative.

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.

Reproductive toxicity 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)

STOT - single exposure Irritating to respiratory system

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

STOT - repeated exposure The available data indicate that the product is of low toxicity and is not classified for repeated dose effects.

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

Aspiration hazard No hazard identified.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Endocrine disrupting properties This product does not contain any known or suspected endocrine disruptors.

11.2.2. Other information

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Low toxicity to aquatic organisms.

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

12.2. Persistence and degradability

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

12.3. Bioaccumulative potential

No bioaccumulation potential.

Chemical name	Partition coefficient	Bioconcentration factor (BCF)
Propionic acid	0.33	

12.4. Mobility in soil

The substance 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

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

12.6. Endocrine disrupting properties

This product does not contain any known or suspected endocrine disruptors.

12.7. 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 or ID number	UN3463
14.2 UN proper shipping name	Propionic acid
Proper Shipping Description	UN3463, Propionic acid, 8 (3), II, (D/E)
14.3 Transport hazard class(es)	8
Subsidiary class	3
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special precautions for user	None
Tunnel restriction code	(D/E)
Limited quantity (LQ)	1 L
ADR Hazard Id (Kemmler Number)	83

RID Rail transport

14.1 UN number	UN3463
14.2 UN proper shipping name	Propionic acid
Proper Shipping Description	UN3463, Propionic acid, 8 (3), II
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special precautions for user	None

IMDG Sea transport

14.1 UN number or ID number	UN3463
14.2 UN proper shipping name	Propionic acid
Proper Shipping Description	UN3463, Propionic acid, 8 (3), II, (51°C c.c.)
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing Group	II
14.5 Marine pollutant	Not applicable
14.6 Special precautions for user	None
EmS-No	F-E, S-C
Limited quantity (LQ)	1 L
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code	Y, S/P, 3,2G

IATA Air transport



14.1 UN number or ID number	UN3463
14.2 UN proper shipping name	Propionic acid
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing group	II
Proper Shipping Description	UN3463, Propionic acid, 8 (3), II
14.5 Environmental hazard	Not applicable
14.6 Special precautions for user	None
Limited quantity (LQ)	0.5 L
ERG Code	8F

SECTION 15: Regulatory information

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

International Regulations

Not applicable.

European Union

This product contains one or more substance(s) subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII), Number: 03, <https://echa.europa.eu/substances-restricted-under-reach>

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

Take note of feed additive regulation (EC) 1831/2003

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.

National regulations

France

Occupational Illnesses (R-463-3, France)

Not applicable

Germany

Water hazard class (WGK)

slightly hazardous to water (WGK 1)

Denmark

MAL Code Number

5-4

15.2. Chemical safety assessment

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

SECTION 16: Other information

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

Full text of H-Statements referred to under section 3

H226 - Flammable liquid and vapour

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

H335 - May cause respiratory irritation

Legend

REACH: Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH) Regulation (EC 1907/2006)

CLP: The Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC 1272/2008)

SVHC: Substances of Very High Concern for Authorisation:

PBT: Persistent, Bioaccumulative, and Toxic (PBT) Chemicals

vPvB: Very Persistent and very Bioaccumulative (vPvB) Chemicals

ED: Endocrine disrupting potential

Issue Date 30-Sep-2021

Revision Date 16-Nov-2021

Reason for revision Reason for revision: COMMISSION REGULATION (EU) 2020/878 of 18 June 2020

This safety data sheet complies with the requirements of: Regulation (EC) No. 1907/2006, COMMISSION REGULATION (EU) 2020/878 of 18 June 2020.

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

EGHS - BE

Exposure scenario

- ES 1 Industrial: Manufacture of substances
- ES 2 Industrial: Transfer of substance or preparation (charging/discharging)
- ES 3 Professional: Transfer of substance or preparation (charging/discharging)
- ES 4 Industrial: Formulation of preparations (mixtures)
- ES 5 Industrial: Use in laboratories
- ES 6 Professional Use in laboratories
- ES 7 Industrial: Use in chemical processes
- ES 8 Industrial: Use as an intermediate
- ES 9 Professional: Use in animal nutrition
- ES 10 Professional: Use as a co-formulant in plant protection products

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	ES 1 - Propionic Acid
Chemical Name	Propionic acid
CAS No	79-09-4
EC No	201-176-3
REACH registration number	01-2119486971-24-0002
Pure substance/mixture	Substance

Exposure scenario

Section 1 - Title

Title	ES1 - Industrial: Manufacture of substances
Version	1
Product Name	Propionic acid
Revision Date	16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC1 - Manufacture of substances

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	>4 h/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None

Conditions and measures related to personal protection, hygiene and health evaluation	Respiratory protection not applicable Hand protection not applicable
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 2
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	IF exposed: Use personal protective equipment as required Wear suitable gloves tested to EN374 APF 5, 80% In case of insufficient ventilation, wear suitable respiratory equipment
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	480 cm ²
Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 3
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	IF exposed: Use personal protective equipment as required Wear suitable gloves tested to EN374 APF 5, 80% In case of insufficient ventilation, wear suitable respiratory equipment
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies) ERC1 - Manufacture of substances

Remarks

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

Control of worker exposure

Calculation method		EasyTRA		
Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS] PROC 1	Worker - inhalative, long-term - systemic	EasyTRA	0.031 mg/m ³	0.0004
Contributing Scenario [CS] PROC 1	Worker - dermal, long-term - systemic	EasyTRA	0.034 mg/kg bw/day	0.002
Contributing Scenario [CS] PROC 1	Worker - inhalative, long-term - local	EasyTRA	0.031 mg/m ³	0.001
Contributing Scenario [CS] PROC 1	Worker - combined, long-term - systemic	EasyTRA	0.039 mg/kg bw/day	0.002
Contributing Scenario [CS] PROC 2	Worker - dermal, long-term - systemic	EasyTRA	0.274 mg/kg bw/day	0.013
Contributing Scenario [CS] PROC 2	Worker - inhalative, long-term - systemic	EasyTRA	3.087 mg/m ³	0.042
Contributing Scenario [CS] PROC 2	Worker - inhalative, long-term - local	EasyTRA	3.087 mg/m ³	0.01
Contributing Scenario [CS] PROC 2	Worker - combined, long-term - systemic	EasyTRA	0.715 mg/kg bw/day	0.055
Contributing Scenario [CS] PROC 3	Worker - dermal, long-term - systemic	EasyTRA	0.137 mg/kg bw/day	0.007
Contributing Scenario [CS] PROC 3	Worker - inhalative, long-term - systemic	EasyTRA	9.26 mg/m ³	0.127
Contributing Scenario [CS] PROC 3	Worker - inhalative, long-term - local	EasyTRA	9.26 mg/m ³	0.299
Contributing Scenario [CS] PROC 3	Worker - combined, long-term - systemic	EasyTRA	1.46 mg/kg bw/day	0.133

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 2 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES2 - Industrial: Transfer of substance or preparation (charging/discharging)
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 h/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	960 cm ²
Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 2
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	960 cm ²
Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 3
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	480 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies)

ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Remarks

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

Control of worker exposure

Calculation method

EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS]	Worker - dermal,	EasyTRA	2.743 mg/kg bw/day	0.131

PROC 8a	long-term - systemic			
Contributing Scenario [CS] PROC 8a	Worker - inhalative, long-term - systemic	EasyTRA	21.607 mg/m ³	0.296
Contributing Scenario [CS] PROC 8a	Worker - inhalative, long-term - local	EasyTRA	21.607 mg/m ³	0.697
Contributing Scenario [CS] PROC 8a	Worker - combined, long-term - systemic	EasyTRA	5.83 mg/kg bw/day	0.427
Contributing Scenario [CS] PROC 8b	Worker - dermal, long-term - systemic	EasyTRA	2.743 mg/kg bw/day	0.131
Contributing Scenario [CS] PROC 8b	Worker - inhalative, long-term - systemic	EasyTRA	15.433 mg/m ³	0.211
Contributing Scenario [CS] PROC 8b	Worker - inhalative, long-term - local	EasyTRA	15.433 mg/m ³	0.498
Contributing Scenario [CS] PROC 8b	Worker - combined, long-term - systemic	EasyTRA	4.948 mg/kg bw/day	0.343
Contributing Scenario [CS] PROC 9	Worker - dermal, long-term - systemic	EasyTRA	1.371 mg/kg bw/day	0.066
Contributing Scenario [CS] PROC 9	Worker - inhalative, long-term - systemic	EasyTRA	15.433 mg/m ³	0.211
Contributing Scenario [CS] PROC 9	Worker - inhalative, long-term - local	EasyTRA	15.433 mg/m ³	0.498
Contributing Scenario [CS] PROC 9	Worker - combined, long-term - systemic	EasyTRA	3.576 mg/kg bw/day	0.277

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.



Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 3 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES3 - Professional: Transfer of substance or preparation (charging/discharging)
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 h/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	960 cm ²
Remarks	Palm of both hands

Indoor/Outdoor use	Indoor use
Title	Contributing Scenario [CS] 2
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	960 cm ²
Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 3
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	480 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies)

ERC8a - Wide dispersive indoor use of processing aids in open systems

Remarks

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

Control of worker exposure

Calculation method

EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
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Contributing Scenario [CS] PROC 8a	Worker - dermal, long-term - systemic	EasyTRA	2.743 mg/kg bw/day	0.131
Contributing Scenario [CS] PROC 8a	Worker - inhalative, long-term - systemic	EasyTRA	23.15 mg/m ³	0.317
Contributing Scenario [CS] PROC 8a	Worker - inhalative, long-term - local	EasyTRA	23.15 mg/m ³	0.747
Contributing Scenario [CS] PROC 8a	Worker - combined, long-term - systemic	EasyTRA	6.05 mg/kg bw/day	0.448
Contributing Scenario [CS] PROC 8b	Worker - dermal, long-term - systemic	EasyTRA	2.743 mg/kg bw/day	0.131
Contributing Scenario [CS] PROC 8b	Worker - inhalative, long-term - systemic	EasyTRA	21.607 mg/m ³	0.296
Contributing Scenario [CS] PROC 8b	Worker - inhalative, long-term - local	EasyTRA	21.607 mg/m ³	0.697
Contributing Scenario [CS] PROC 8b	Worker - combined, long-term - systemic	EasyTRA	5.83 mg/kg bw/day	0.427
Contributing Scenario [CS] PROC 9	Worker - dermal, long-term - systemic	EasyTRA	1.371 mg/kg bw/day	0.066
Contributing Scenario [CS] PROC 9	Worker - inhalative, long-term - systemic	EasyTRA	21.607 mg/m ³	0.296
Contributing Scenario [CS] PROC 9	Worker - inhalative, long-term - local	EasyTRA	21.607 mg/m ³	0.697
Contributing Scenario [CS] PROC 9	Worker - combined, long-term - systemic	EasyTRA	4.458 mg/kg bw/day	0.362

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 4 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES4 - Industrial: Formulation of preparations (mixtures)
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 h/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Hand protection not applicable
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 2
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Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	480 cm ²
Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 3
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 4
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	480 cm ²
Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies)

ERC2 - Formulation of preparations (mixtures)

Remarks

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

Control of worker exposure

Calculation method

EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS] PROC 1	Worker - dermal, long-term - systemic	EasyTRA	0.0343 mg/kg bw/day	0.0016
Contributing Scenario [CS] PROC 1	Worker - inhalative, long-term - systemic	EasyTRA	0.0309 mg/m ³	0.0004
Contributing Scenario [CS] PROC 1	Worker - inhalative, long-term - local	EasyTRA	0.0309 mg/m ³	0.001
Contributing Scenario [CS] PROC 1	Worker - combined, long-term - systemic	EasyTRA	0.0387 mg/kg bw/day	0.002
Contributing Scenario [CS] PROC 2	Worker - dermal, long-term - systemic	EasyTRA	0.274 mg/kg bw/day	0.013
Contributing Scenario [CS] PROC 2	Worker - inhalative, long-term - systemic	EasyTRA	3.087 mg/m ³	0.042
Contributing Scenario [CS] PROC 2	Worker - inhalative, long-term - local	EasyTRA	3.087 mg/m ³	0.1
Contributing Scenario [CS] PROC 2	Worker - combined, long-term - systemic	EasyTRA	0.715 mg/kg bw/day	0.055
Contributing Scenario [CS] PROC 3	Worker - dermal, long-term - systemic	EasyTRA	0.137 mg/kg bw/day	0.007
Contributing Scenario [CS] PROC 3	Worker - inhalative, long-term - systemic	EasyTRA	9.26 mg/m ³	0.127
Contributing Scenario [CS] PROC 3	Worker - inhalative, long-term - local	EasyTRA	9.26 mg/m ³	0.299
Contributing Scenario [CS] PROC 3	Worker - combined, long-term - systemic	EasyTRA	1.46 mg/kg bw/day	0.133
Contributing Scenario [CS] PROC 4	Worker - dermal, long-term - systemic	EasyTRA	1.371 mg/kg bw/day	0.066
Contributing Scenario [CS] PROC 4	Worker - inhalative, long-term - systemic	EasyTRA	15.433 mg/m ³	0.211
Contributing Scenario [CS] PROC 4	Worker - inhalative, short-term - local	EasyTRA	15.433 mg/m ³	0.498
Contributing Scenario [CS] PROC 4	Worker - combined, long-term - systemic	EasyTRA	3.576 mg/kg bw/day	0.277
Contributing Scenario [CS] PROC 5	Worker - dermal, long-term - systemic	EasyTRA	2.743 mg/kg bw/day	0.131
Contributing Scenario [CS] PROC 5	Worker - inhalative, long-term - systemic	EasyTRA	15.433 mg/m ³	0.211
Contributing Scenario [CS] PROC 5	Worker - inhalative, long-term - local	EasyTRA	15.433 mg/m ³	0.498
Contributing Scenario [CS] PROC 5	Worker - combined, long-term - systemic	EasyTRA	4.948 mg/kg bw/day	0.343

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management

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measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.



Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 5 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES5 - Industrial: Use in laboratories
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use



Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies)

ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Remarks

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

Control of worker exposure

Calculation method

EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS] PROC 15	Worker - dermal, long-term - systemic	EasyTRA	0.067 mg/kg bw/day	0.003
Contributing Scenario [CS] PROC 15	Worker - inhalative, long-term - systemic	EasyTRA	15.433 mg/m ³	0.211
Contributing Scenario [CS] PROC 15	Worker - inhalative, long-term - local	EasyTRA	15.433 mg/m ³	0.498
Contributing Scenario [CS] PROC 15	Worker - combined, long-term - systemic	EasyTRA	2.273 mg/kg bw/day	0.215

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 6 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES6 - Professional: Use in laboratories
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use



Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems

Remarks

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

Control of worker exposure

Calculation method EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS] PROC 15	Worker - dermal, long-term - systemic	EasyTRA	0.067 mg/kg bw/day	0.003
Contributing Scenario [CS] PROC 15	Worker - inhalative, long-term - systemic	EasyTRA	15.433 mg/m ³	0.211
Contributing Scenario [CS] PROC 15	Worker - inhalative, long-term - local	EasyTRA	15.433 mg/m ³	0.498
Contributing Scenario [CS] PROC 15	Worker - combined, long-term - systemic	EasyTRA	2.273 mg/kg bw/day	0.215

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 7 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES7 - Industrial: Use in chemical processes
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
 ERC6b - Industrial use of reactive processing aids

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	>4 h/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	Respiratory protection not applicable Hand protection not applicable
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use



Title	Contributing Scenario [CS] 2
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	480 cm ²
Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 3
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies)

ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
 ERC6b - Industrial use of reactive processing aids

Remarks

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

Control of worker exposure

Calculation method

EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS]	Worker - dermal,	EasyTRA	0.034 mg/kg bw/day	0.002

PROC 1	long-term - systemic			
Contributing Scenario [CS] PROC 1	Worker - inhalative, long-term - systemic	EasyTRA	0.031 mg/m ³	0.0004
Contributing Scenario [CS] PROC 1	Worker - inhalative, long-term - local	EasyTRA	0.031 mg/m ³	0.001
Contributing Scenario [CS] PROC 1	Worker - combined, long-term - systemic	EasyTRA	0.039 mg/kg bw/day	0.002
Contributing Scenario [CS] PROC 2	Worker - dermal, long-term - systemic	EasyTRA	0.274 mg/kg bw/day	0.013
Contributing Scenario [CS] PROC 2	Worker - inhalative, long-term - systemic	EasyTRA	3.087 mg/m ³	0.042
Contributing Scenario [CS] PROC 2	Worker - inhalative, long-term - local	EasyTRA	3.087 mg/m ³	0.01
Contributing Scenario [CS] PROC 2	Worker - combined, long-term - systemic	EasyTRA	0.715 mg/kg bw/day	0.055
Contributing Scenario [CS] PROC 3	Worker - dermal, long-term - systemic	EasyTRA	0.137 mg/kg bw/day	0.007
Contributing Scenario [CS] PROC 3	Worker - inhalative, long-term - systemic	EasyTRA	9.26 mg/m ³	0.127
Contributing Scenario [CS] PROC 3	Worker - inhalative, long-term - local	EasyTRA	9.26 mg/m ³	0.299
Contributing Scenario [CS] PROC 3	Worker - combined, long-term - systemic	EasyTRA	1.46 mg/kg bw/day	0.133
Contributing Scenario [CS] PROC 4	Worker - dermal, long-term - systemic	EasyTRA	1.371 mg/kg bw/day	0.066
Contributing Scenario [CS] PROC 4	Worker - inhalative, long-term - systemic	EasyTRA	15.433 mg/m ³	0.211
Contributing Scenario [CS] PROC 4	Worker - inhalative, long-term - local	EasyTRA	15.433 mg/m ³	0.498
Contributing Scenario [CS] PROC 4	Worker - combined, long-term - systemic	EasyTRA	3.576 mg/kg bw/day	0.277

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.



Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 8 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES8 - Industrial: Use as an intermediate
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	>4 h/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	Respiratory protection not applicable Hand protection not applicable
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use



Title	Contributing Scenario [CS] 2
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	480 cm ²
Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use

Title	Contributing Scenario [CS] 3
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	240 cm ²
Remarks	Palm of one hand
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies)

ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Remarks

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

Control of worker exposure

Calculation method

EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS] PROC 1	Worker - dermal, long-term - systemic	EasyTRA	0.034 mg/kg bw/day	0.002
Contributing Scenario [CS] PROC 1	Worker - inhalative, long-term - systemic	EasyTRA	0.031 mg/m ³	0.0004

Contributing Scenario [CS] PROC 1	Worker - inhalative, long-term - local	EasyTRA	0.031 mg/m ³	0.001
Contributing Scenario [CS] PROC 1	Worker - combined, long-term - systemic	EasyTRA	0.039 mg/kg bw/day	0.002
Contributing Scenario [CS] PROC 2	Worker - dermal, long-term - systemic	EasyTRA	0.274 mg/kg bw/day	0.013
Contributing Scenario [CS] PROC 2	Worker - inhalative, long-term - systemic	EasyTRA	3.087 mg/m ³	0.042
Contributing Scenario [CS] PROC 2	Worker - inhalative, long-term - local	EasyTRA	3.087 mg/m ³	0.01
Contributing Scenario [CS] PROC 2	Worker - combined, long-term - systemic	EasyTRA	0.715 mg/kg bw/day	0.055
Contributing Scenario [CS] PROC 3	Worker - dermal, long-term - systemic	EasyTRA	0.137 mg/kg bw/day	0.007
Contributing Scenario [CS] PROC 3	Worker - inhalative, long-term - systemic	EasyTRA	9.26 mg/m ³	0.127
Contributing Scenario [CS] PROC 3	Worker - inhalative, long-term - local	EasyTRA	9.26 mg/m ³	0.299
Contributing Scenario [CS] PROC 3	Worker - combined, long-term - systemic	EasyTRA	1.46 mg/kg bw/day	0.133

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.



Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 9 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES9 - Professional: Use in animal nutrition
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems
 ERC8d - Wide dispersive outdoor use of processing aids in open systems

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	100 %
Physical form of product	Liquid
Exposure duration	>4 h/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	At normal use conditions: Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 5, 80% In case of potential exposure: Wear suitable respiratory protection
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	480 cm ²



Remarks	Palm of both hands
Indoor/Outdoor use	Indoor use
Title	Contributing Scenario [CS] 2
Process category(ies)	PROC11 - Non industrial spraying
Covers concentrations up to	10 %
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	None
Conditions and measures related to personal protection, hygiene and health evaluation	Respiratory protection not applicable Wear suitable personal protective equipment Wear suitable gloves tested to EN374 APF 10, 90%
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure doors and windows are opened Regular inspection and maintenance of equipment and machines Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m) Ensure that the task is not carried out by more than one worker simultaneously
Covers skin contact area up to	1500 cm ²
Remarks	Two hands and upper wrists
Indoor/Outdoor use	Indoor use

Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies)

ERC8a - Wide dispersive indoor use of processing aids in open systems
 ERC8d - Wide dispersive outdoor use of processing aids in open systems

Remarks

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

Control of worker exposure

Calculation method

Used Stoffenmanager model
 and
 EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS] PROC 5	Worker - dermal, long-term - systemic	EasyTRA	2.743 mg/kg bw/day	0.131
Contributing Scenario [CS] PROC 5	Worker - inhalative, long-term - systemic	EasyTRA	21.607 mg/m ³	0.296
Contributing Scenario [CS] PROC 5	Worker - inhalative, long-term - local	EasyTRA	21.607 mg/m ³	0.697
Contributing Scenario [CS] PROC 5	Worker - combined, long-term - systemic	EasyTRA	5.83 mg/kg bw/day	0.427
Contributing Scenario [CS] PROC 11	Worker - dermal, long-term - systemic	EasyTRA	1.071 mg/kg bw/day	0.051
Contributing Scenario [CS] PROC 11	Worker - inhalative, long-term - systemic	Used Stoffenmanager model	28.52 mg/m ³	0.391
Contributing Scenario [CS] PROC 11	Worker - inhalative, long-term - local	Used Stoffenmanager model	28.52 mg/m ³	0.920
Contributing Scenario [CS] PROC 11	Worker - combined, long-term - systemic	EasyTRA	5.146 mg/kg bw/day	0.442

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name ES 10 - Propionic Acid
Chemical Name Propionic acid
CAS No 79-09-4
EC No 201-176-3
REACH registration number 01-2119486971-24-0002
Pure substance/mixture Substance

Exposure scenario

Section 1 - Title

Title ES10 - Professional: Use as a co-formulant in plant protection products
Version 1
Product Name Propionic acid
Revision Date 16-Nov-2021

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems
 ERC8d - Wide dispersive outdoor use of processing aids in open systems

Remarks

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

Section 2.2 - Control of worker exposure

Control of worker exposure	
Title	Contributing Scenario [CS] 1
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	100 %
Remarks	hand-held spraying tractor-mounted spraying
Physical form of product	Liquid
Exposure duration	>4 h/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Outdoor Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Respiratory protection not applicable Hand protection not applicable In case of potential exposure: Wear suitable respiratory protection Wear suitable personal protective equipment
Organisational measures to prevent /limit releases, dispersion and exposure	None



Covers skin contact area up to	960 cm ²
Remarks	Both hands
Indoor/Outdoor use	Outdoor

Title	Contributing Scenario [CS] 2
Process category(ies)	PROC11 - Non industrial spraying
Covers concentrations up to	100 %
Remarks	hand-held spraying tractor-mounted spraying
Physical form of product	Liquid
Exposure duration	> 4 hours/day
Use frequency	5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Outdoor Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Respiratory protection not applicable Hand protection not applicable In case of potential exposure: Wear suitable respiratory protection Wear suitable personal protective equipment
Organisational measures to prevent /limit releases, dispersion and exposure	None
Covers skin contact area up to	1500 cm ²
Remarks	Two hands and upper wrists
Indoor/Outdoor use	Outdoor use

Section 3 - Exposure estimation

Environmental exposure

Environmental release category(ies)

ERC8a - Wide dispersive indoor use of processing aids in open systems
 ERC8d - Wide dispersive outdoor use of processing aids in open systems

Remarks

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

Control of worker exposure

Calculation method

EasyTRA

Title	Exposure route	Calculation method	predicted exposure level	Risk characterisation ratio (RCR)
Contributing Scenario [CS] PROC 8a tractor-mounted spraying	Worker - dermal, long-term - systemic	ECPA OWB Tool v3.2	0.274 mg/kg bw/day	0.013
Contributing Scenario [CS] PROC 8a tractor-mounted spraying	Worker - inhalative, long-term - systemic	ECPA OWB Tool v3.2	0.0005 mg/m ³	6.85 E-6
Contributing Scenario [CS] PROC 8a tractor-mounted spraying	Worker - inhalative, long-term - local	ECPA OWB Tool v3.2	0.0005 mg/m ³	0.000016
Contributing Scenario [CS] PROC 8a tractor-mounted spraying	Worker - combined, long-term - systemic	EasyTRA	0.274 mg/kg bw/day	0.013
Contributing Scenario [CS] PROC 8a hand-held spraying	Worker - dermal, long-term - systemic	ECPA OWB Tool v3.2	2.93 mg/kg bw/day	0.140
Contributing Scenario [CS] PROC 8a hand-held spraying	Worker - inhalative, long-term - systemic	ECPA OWB Tool v3.2	0.005 mg/m ³	0.000068
Contributing Scenario [CS]	Worker - inhalative,	ECPA OWB Tool v3.2	0.005 mg/m ³	0.000161

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PROC 8a hand-held spraying	long-term - local			
Contributing Scenario [CS] PROC 8a hand-held spraying	Worker - combined, long-term - systemic	EasyTRA	2.931 mg/kg bw/day	0.140
Contributing Scenario [CS] PROC 11 tractor-mounted spraying	Worker - dermal, long-term - systemic	ECPA OWB Tool v3.2	1.31 mg/kg bw/day	0.063
Contributing Scenario [CS] PROC 11 tractor-mounted spraying	Worker - inhalative, long-term - systemic	ECPA OWB Tool v3.2	0.014 mg/m ³	0.0002
Contributing Scenario [CS] PROC 11 tractor-mounted spraying	Worker - inhalative, long-term - local	ECPA OWB Tool v3.2	0.014 mg/m ³	0.0005
Contributing Scenario [CS] PROC 11 tractor-mounted spraying	Worker - combined, long-term - systemic	EasyTRA	1.312 mg/kg bw/day	0.063
Contributing Scenario [CS] PROC 11 hand-held spraying	Worker - dermal, long-term - systemic	ECPA OWB Tool v3.2	0.577 mg/kg bw/day	0.028
Contributing Scenario [CS] PROC 11 hand-held spraying	Worker - inhalative, long-term - systemic	ECPA OWB Tool v3.2	3.5 mg/m ³	0.048
Contributing Scenario [CS] PROC 11 hand-held spraying	Worker - inhalative, long-term - local	ECPA OWB Tool v3.2	3.5 mg/m ³	0.113
Contributing Scenario [CS] PROC 11 hand-held spraying	Worker - combined, long-term - systemic	EasyTRA	1.077 mg/kg bw/day	0.076

Section 4 - Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

