

SAFETY DATA SHEET

according to REACH Regulation (EC) No. 1907/2006, as amended by UK REACH Regulations SI 2019/758



Propionic acid
10970

Version / Revision
Supersedes Version

5
4.00***

Revision Date
Issuing date

28-Oct-2022
28-Oct-2022

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

1.1. Product identifier

Identification of the substance/preparation

Propionic acid

CAS-No
EC No.

79-09-4
201-176-3

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

Identified uses
Uses advised against

Intermediate under non-strictly controlled conditions
None

1.3. Details of the supplier of the safety data sheet

Company/Undertaking
Identification

OQ Chemicals GmbH
Rheinpromenade 4A
D-40789 Monheim
Germany

Product Information

Product Stewardship
FAX: +49 (0)208 693 2053
email: sc.psq@oq.com

1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 670 (UK)
available 24/7

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation)

Flammable liquid Category 3, H226
Skin corrosion/irritation Category 1B, H314
Serious eye damage/eye irritation Category 1, H318
Target Organ Systemic Toxicant - Single exposure Category 3, H335

Additional information

For full text of Hazard- and EU Hazard-statements see SECTION 16.

2.2. Label elements

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

Hazard pictograms

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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 gas/mist/vapours.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER/doctor.
P403 + P233: Store in a well ventilated place. Keep container tightly closed.
P235: Keep cool.

2.3. Other hazards

Vapour/air-mixtures are explosive at intense warming

Components of the product may be absorbed into the body by inhalation and ingestion

PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

Endocrine disrupting assessments

The substance is not listed on the candidate list according to Art. 59(1), REACH. The substance was not assessed as having endocrine disrupting properties according to regulation 2017/2100/EU or 2018/605/EU.

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	1272/2008/EC	Concentration (%)
Propionic acid	79-09-4	Flam. Liq. 3; H226 Skin Corr. 1B; H314 Eye Dam. 1; H318 STOT SE 3; H335: C ≥ 10% Skin Corr. 1B; H314: C ≥ 25% Skin Irrit. 2; H315: 10 % ≤ C < 25 % Eye Irrit. 2; H319: 10 % ≤ C < 25 % %***	> 99,5

For full text of Hazard- and EU Hazard-statements see SECTION 16.

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SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

Skin

Wash off immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Ingestion

Call a physician immediately. Do not induce vomiting without medical advice.

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

Main symptoms

cough, shortness of breath, abdominal pain, nausea, vomiting, circulatory collapse.

Special hazard

Lung irritation.

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

General advice

Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

foam, dry chemical, carbon dioxide (CO₂), water spray

Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of:

carbon monoxide (CO)

carbon dioxide (CO₂)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Vapours are heavier than air and may spread along floors

Vapour/air-mixtures are explosive at intense warming

5.3. Advice for firefighters

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Special protective equipment for firefighters

Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

Precautions for firefighting

Cool containers / tanks with water spray. Water run-off and vapor cloud may be corrosive. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: For personal protective equipment see section 8. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.

For emergency responders: Personal protection see section 8.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

6.3. Methods and material for containment and cleaning up

Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections

For personal protective equipment see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Further info may be available in the appropriate Exposure scenarios in the annex to this SDS.

Advice on safe handling

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Incompatible products

bases
amines
strong oxidizing agents

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7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material. Vapour/air-mixtures are explosive at intense warming.

Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Keep at temperatures between -12 and 38 °C (10 and 100 °F).

Unsuitable material

None known

Temperature class

T2

7.3. Specific end use(s)

Intermediate under non-strictly controlled conditions

For specific end use information see the annex of this safety data sheet

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits European Union

Directive 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU

Component	TWA (mg/m ³)	TWA (ppm)	STEL (mg/m ³)	STEL (ppm)	Skin Absorption
Propionic acid CAS: 79-09-4	31	10	62	20	

Exposure limits UK

EH40 WELs

Component	TWA (mg/m ³)	TWA (ppm)	STEL (mg/m ³)	STEL (ppm)
Propionic acid CAS: 79-09-4	31	10	46	15

Note

For details and further information please refer to the original regulation.

DNEL & PNEC

Propionic acid, CAS: 79-09-4

Workers

DN(M)EL - long-term exposure - systemic effects - Inhalation

73 mg/m³

DN(M)EL - acute / short-term exposure - systemic effects - Inhalation

No hazard identified

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DN(M)EL - long-term exposure - local effects - Inhalation	31 mg/m ³
DN(M)EL - acute / short-term exposure - local effects - Inhalation	62 mg/m ³
DN(M)EL - long-term exposure - systemic effects - Dermal	20,9 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	Medium hazard (no threshold derived)
DN(M)EL - long-term exposure - local effects - Dermal	Medium hazard (no threshold derived)
DN(M)EL - acute / short-term exposure - local effects - Dermal	Medium hazard (no threshold derived)
DN(M)EL - local effects - eyes	Medium hazard (no threshold derived)

General population

DN(M)EL - long-term exposure - systemic effects - Inhalation	18,3 mg/m ³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - local effects - Inhalation	3,7 mg/m ³
DN(M)EL - acute / short-term exposure - local effects - Inhalation	30,8 mg/m ³
DN(M)EL - long-term exposure - systemic effects - Dermal	10,5 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	Medium hazard (no threshold derived)
DN(M)EL - long-term exposure - local effects - Dermal	Medium hazard (no threshold derived)
DN(M)EL - acute / short-term exposure - local effects - Dermal	Medium hazard (no threshold derived)
DN(M)EL - long-term exposure - systemic effects - Oral	10,5 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Oral	No hazard identified
DN(M)EL - local effects - eyes	Medium hazard (no threshold derived)

Environment

PNEC aqua - freshwater	0,5 mg/l
PNEC aqua - marine water	0,05 mg/l
PNEC aqua - intermittent releases	5 mg/l
PNEC STP	5 mg/l
PNEC sediment - freshwater	1,86 mg/kg
PNEC sediment - marine water	0,186 mg/kg
PNEC soil	0,1258 mg/kg
Secondary poisoning	No potential for bioaccumulation

8.2. Exposure controls

Special adaptations (REACH)

Not applicable.

Appropriate Engineering controls

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Personal protective equipment

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General industrial hygiene practice

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Eye protection

Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Equipment should conform to EN 166

Hand protection

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Suitable material	butyl-rubber
Evaluation	according to EN 374: level 6
Glove thickness	approx 0,3 mm
Break through time	> 480 min

Suitable material	polyvinylchloride / nitrile rubber
Evaluation	according to EN 374: level 4
Glove thickness	approx 0,9 mm
Break through time	approx 120 min

Skin and body protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory protection

Respirator with A filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

Environmental exposure controls

If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

Additional advice

Further details on substance data can be found in the registration dossier under the following link:
<http://echa.europa.eu/information-on-chemicals/registered-substances>. For specific exposure controls see the annex to this safety data sheet.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	liquid***
Colour	colourless
Odour	unpleasant
Odour threshold	No data available
Melting point/freezing point	-21,5 °C
Boiling point or initial boiling	141 °C @ 1013 hPa

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point and boiling range

Flammability	Ignitable
Lower explosion limit	2,1 Vol %
Upper explosion limit	12 Vol %
Flash point	50,5 °C
Method	DIN 51755
Autoignition temperature	440 °C
Method	DIN 51794
Decomposition temperature	No data available
pH	No data available
Kinematic Viscosity	1,187 mm ² /s @ 15 °C***
Solubility	completely soluble, in water
Partition coefficient n-octanol/water (log value)	0,33 (measured)

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
4,0	0,40	0,004	23	73	
22	2,2	0,022	50	122	

Density and/or relative density

Values	@ °C	@ °F	Method
0,99	20	68	

Relative vapour density 2,6 (Air = 1) @ 20 °C (68 °F)

Particle characteristics not applicable

9.2. Other information

Explosive properties	Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties
Oxidizing properties	Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties
Molecular weight	74,08
Molecular formula	C ₃ H ₆ O ₂
Refractive index	1,387 @ 20 °C
Evaporation rate	No data available

SECTION 10: Stability and Reactivity

10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Vapour/air-mixtures are explosive at intense warming.

10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

10.5. Incompatible materials

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bases, amines, strong oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

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

Likely routes of exposure Ingestion, Inhalation, Eye contact, Skin contact

Acute toxicity				
Propionic acid (79-09-4)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	3455 mg/kg	rat, male/female	OECD 401
Inhalative	LC50	> 19,7 mg/l (1 h)	rat, male/female	OECD 403 (vapour)

Propionic acid, CAS: 79-09-4

Assessment

Based on available data, the classification criteria are not met for:

Acute oral toxicity

Acute inhalation toxicity

STOT SE

Dermal acute toxicity data were not determined, because of the corrosive properties of the substance

Irritation and corrosion				
Propionic acid (79-09-4)				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	corrosive		
Eyes	rabbit	corrosive		

Propionic acid, CAS: 79-09-4

Assessment

The available data lead to the classification given in section 2

For respiratory irritation, no data are available

Sensitization				
Propionic acid (79-09-4)				
Target Organ Effects	Species	Evaluation	Method	
Skin	guinea pig	not sensitizing	OECD 406	

Propionic acid, CAS: 79-09-4

Assessment

Based on available data, the classification criteria are not met for:

Skin sensitization

For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity				
Propionic acid (79-09-4)				
Type	Dose	Species	Method	
Subchronic toxicity	NOAEL: 6200 ppm/d (90d) Local	rat, male/female	OECD 408 Oral	

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	effects			
Subchronic toxicity	NOAEL: 50000 ppm/d (90d) systemic effects	rat, male/female	OECD 408 Oral	
Subchronic toxicity	LOAEL: 136,9 mg/kg/d (90d)	mouse	OECD 411 Dermal	

Propionic acid, CAS: 79-09-4

Assessment

Based on available data, the classification criteria are not met for:
STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity

Propionic acid (79-09-4)

Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		Chinese hamster	negative	OECD 474	in vivo
Carcinogenicity	NOAEL: 400 ppm	rat		Oral	Local effects
Carcinogenicity	NOAEL: 4000 ppm	rat		Oral	systemic effects
Developmental Toxicity	NOAEL 300 mg/kg/d	rat		OECD 414, Oral	Maternal toxicity Teratogenicity read across

Propionic acid, CAS: 79-09-4

CMR Classification

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

Evaluation

In vitro tests did not show mutagenic effects

Propionic acid, CAS: 79-09-4

Main symptoms

cough, shortness of breath, abdominal pain, nausea, vomiting, circulatory collapse.

Target Organ Systemic Toxicant - Single exposure

Based on available data, the classification criteria are not met for:
STOT SE

Target Organ Systemic Toxicant - Repeated exposure

Based on available data, the classification criteria are not met for:
STOT RE

Aspiration toxicity

no data available

11.2. Information on other hazards

Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

Propionic acid, CAS: 79-09-4

Other adverse effects

Components of the product may be absorbed into the body by inhalation and ingestion.***

Note

Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:

<http://echa.europa.eu/information-on-chemicals/registered-substances>.

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SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity			
Propionic acid (79-09-4)			
Species	Exposure time	Dose	Method
Leuciscus idus (Golden orfe)	96h	LC50: > 10000 mg/l	DIN 38412, part 15
Daphnia magna (Water flea)	48h	EC50: > 500 mg/l	84/449/EEC C.2
Desmodesmus subspicatus	72h	EC50: > 500 mg/l (Biomass)	OECD 201
Activated sludge (domestic)	30 min	EC20: 1040 mg/l	ISO 8192 Respiration rate

12.2. Persistence and degradability

Propionic acid, CAS: 79-09-4

Biodegradation

95 % (10 d), aerobic, activated sludge, industrial, OECD 302 B (Zahn-Wellens Test).

12.3. Bioaccumulative potential

Propionic acid (79-09-4)		
Type	Result	Method
log Pow	0,33	measured

12.4. Mobility in soil

Propionic acid (79-09-4)		
Type	Result	Method
	no data available	

12.5. Results of PBT and vPvB assessment

Propionic acid, CAS: 79-09-4

PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

12.6. Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

12.7. Other adverse effects

Propionic acid, CAS: 79-09-4

No data available

Note

Avoid release to the environment.

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product Information

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Hazardous waste according to European Waste Catalogue (EWC)

Uncleaned empty packaging

Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

ADR/RID

14.1. UN number or ID number	UN 3463
14.2. UN proper shipping name	Propionic acid
14.3. Transport hazard class(es)	8
Subsidiary Risk	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
ADR Tunnel restriction code	(D/E)
Classification Code	CF1
Hazard Number	83

ADN

ADN: Container and Tanker

14.1. UN number or ID number	UN 3463
14.2. UN proper shipping name	Propionic acid
14.3. Transport hazard class(es)	8
Subsidiary Risk	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
Classification Code	CF1
Hazard Number	83

ICAO-TI / IATA-DGR

14.1. UN number or ID number	UN 3463
14.2. UN proper shipping name	Propionic acid
14.3. Transport hazard class(es)	8
Subsidiary Risk	3
14.4. Packing group	II
14.5. Environmental hazards	no

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14.6. Special precautions for user no data available

IMDG

14.1. UN number or ID number UN 3463
14.2. UN proper shipping name Propionic acid
14.3. Transport hazard class(es) 8
Subsidiary Risk 3
14.4. Packing group II
14.5. Environmental hazards no
14.6. Special precautions for user EmS F-E, S-C
14.7. Maritime transport in bulk according to IMO instruments ***
Product name Propionic acid
Ship type 3
Pollution category Y
Hazard class S/P***

SECTION 15: Regulatory information

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

Regulation 1272/2008, Annex VI

Propionic acid, CAS: 79-09-4

Classification Skin Corr. 1B; H314
Hazard pictograms GHS05 Corrosion
Signal word Danger
Hazard statements H314

DI 2012/18/EU (Seveso III)

Category Annex I, part 1:
P5a - c; depending on conditions

DI 1999/13/EC (VOC Guideline)

Component	Status
Propionic acid CAS: 79-09-4	regulated

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019 No. 758

Component	Status
Propionic acid CAS: 79-09-4	The substance will not be pre-registered

For details and further information please refer to the original regulation.

International Inventories

Propionic acid, CAS: 79-09-4

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AICS (AU)
DSL (CA)
IECSC (CN)
EC-No. 2011763 (EU)
ENCS (2)-602 (JP)
ISHL (2)-602 (JP)
KECI KE-29352 (KR)
INSQ (MX)
PICCS (PH)
TSCA (US)
NZIoC (NZ)**
TCSI (TW)

National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)

not subject

Releases to water (Pollution Inventory Substances)

not subject

Releases to sewer (Pollution Inventory Substances)

not subject

For details and further information please refer to the original regulation

15.2. Chemical safety assessment

The Chemical Safety Report (CSR) has been generated. For Exposure Scenarios see the annex.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3

H226: Flammable liquid and vapour.

H314: Causes severe skin burns and eye damage.

H318: Causes serious eye damage.

H335: May cause respiratory irritation.

Abbreviations

A table of terms and abbreviations can be found under the following link:

http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf

Training advice

For effective first-aid, special training / education is needed.

Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on OQ owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet

Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the OQ homepage (www.chemicals.oq.com).

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Disclaimer

For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. OQ Chemicals makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

End of Safety Data Sheet

Annex to the extended Safety Data Sheet (eSDS)

General information

The annex does not yet reflect the latest dossier update and will be updated as soon as possible

Avoid manual contact with wet work pieces

Clean equipment and the work area every day

Wear protective gloves/clothing and eye/face protection, where direct contact with substance is possible

The RMMs described suffice to control risks for both local and systemic effects

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described below and you are unsure if they are also safe

Operational conditions and risk management measures

Minimization of manual phases

Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Exposure scenario identification

1 Industrial use resulting in manufacture of another substance (use of intermediates)

Number of the ES 1

Short title of the exposure scenario

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

List of use descriptors

Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC15: Use as laboratory reagent

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Environmental release categories [ERC]

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

Further explanations

Industrial use

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Assumes a good basic standard of occupational hygiene is implemented

Number of the contributing scenario 1
Contributing exposure scenario controlling environmental exposure for ERC 6a

Further specification

release factors for (Sp)ERC were modified

assessment tool used: Chesar 2.3

Amounts used

Daily amount per site: 10 to

Annual amount per site: 1000 to

Fraction of EU tonnage used in region: 1

Frequency and duration of use

Covers use up to: 100 days

Environment factors not influenced by risk management

River flow rate: 18000 m³/d

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

Technical conditions and measures at process level (source) to prevent release

Release fraction to air from process: 5 %

Release fraction to wastewater from process: 0.1 %

Release fraction to soil from process: 0.1%

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Additional site specific RMM: assumed efficiency (release to wastewater): 95 %

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m³/d): 2000

Estimated substance removal from wastewater via domestic sewage treatment (%): 87.35

Number of the contributing scenario 2
Contributing exposure scenario controlling worker exposure for PROC 1

Further specification

Assessment tool used: Chesar 2.3

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure < 0,5 kPa at STP

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure

Indoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).

Number of the contributing scenario 3
Contributing exposure scenario controlling worker exposure for PROC 2

Further specification

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Assessment tool used: Chesar 2.3

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure < 0,5 kPa at STP

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure

Indoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.

Number of the contributing scenario 4
Contributing exposure scenario controlling worker exposure for PROC 3

Further specification

Assessment tool used: Chesar 2.3

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure < 0,5 kPa at STP

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure

Indoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.

Number of the contributing scenario 5
Contributing exposure scenario controlling worker exposure for PROC 4

Further specification

Assessment tool used: Chesar 2.3

Product characteristics

Liquid, vapour pressure < 0,5 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure

Indoor use

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

Wear suitable gloves tested to EN374.

Number of the contributing scenario 6
Contributing exposure scenario controlling worker exposure for PROC 8a

Further specification

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Assessment tool used: Chesar 2.3

Product characteristics

Liquid, vapour pressure < 0,5 kPa at STP

Covers percentage substance in the product up to 100 % (unless stated differently)

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)

Other given operational conditions affecting workers exposure

Indoor use

Technical conditions and measures to control dispersion from source towards the worker

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.

Number of the contributing scenario

7

Contributing exposure scenario controlling worker exposure for PROC 8b

Further specification

Assessment tool used: Chesar 2.3

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure < 0,5 kPa at STP

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to 2 hands (960 cm²)

Other given operational conditions affecting workers exposure

Indoor use

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

Wear suitable gloves tested to EN374.

Number of the contributing scenario

8

Contributing exposure scenario controlling worker exposure for PROC 9

Further specification

Assessment tool used: Chesar 2.3

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure < 0,5 kPa at STP

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 2 hands (480 cm²)

Other given operational conditions affecting workers exposure

Indoor use

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

Wear suitable gloves tested to EN374.

Number of the contributing scenario

9

Contributing exposure scenario controlling worker exposure for PROC 15

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Further specification

Assessment tool used: Chesar 2.3

Product characteristics

Covers percentage substance in the product up to 100 % (unless stated differently)

Liquid, vapour pressure < 0,5 kPa at STP

Frequency and duration of use

8 h (full shift)

Human factors not influenced by risk management

Area potentially exposed: corresponds to palm of 1 hand (240 cm²)

Other given operational conditions affecting workers exposure

Indoor use

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

Wear suitable gloves tested to EN374.

Exposure estimation and reference to its source

Environment

PEC = predicted environmental concentration (local+regional); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 0.063 mg/l; RCR: 0.127
Fresh Water (Sediment)	PEC: 0.236 mg/kg dw; RCR: 0.127
Marine Water (Pelagic)	PEC: 0.006 mg/l; RCR: 0.127
Marine Water (Sediment)	PEC: 0.024 mg/kg dw; RCR: 0.127
Agricultural Soil	PEC: 0.006 mg/kg dw; RCR: 0.047
Sewage Treatment Plant (Effluent)	PEC: 0.633 mg/l; RCR: 0.127

Human exposure prediction (oral, dermal, inhalative)

EE(derm, local): Estimated dermal local long-term exposure [mg/cm²]. EE(inhal): Estimated inhalative short-term exposure [mg/m³]; EE(derm): Estimated dermal short-term exposure [mg/kg b.w./d]. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. Oral exposure is not expected to occur.

Proc 1	EE(inhal): 0.124 ; EE(derm): 0.034 EE(derm, local): 0.010
Proc 2	EE(inhal): 12.346 ; EE(derm): 0.274 EE(derm, local): 0.040
Proc 3	EE(inhal): 37.039 ; EE(derm): 0.138 EE(derm, local): 0.040
Proc 4	EE(inhal): 43.213 ; EE(derm): 1.372 EE(derm, local): 0.200
Proc 8a	EE(inhal): 12.346 ; EE(derm): 2.742 EE(derm, local): 0.200
Proc 8b	EE(inhal): 43.213 ; EE(derm): 2.742 EE(derm, local): 0.200
Proc 9	EE(inhal): 43.213 ; EE(derm): 1.372 EE(derm, local): 0.200
Proc 15	EE(inhal): 43.213 ; EE(derm): 0.068 EE(derm, local): 0.020

Risk characterisation

RCR(inhal): inhalative risk characterisation ratio; RCR(derm): dermal risk characterisation ratio; total RCR= RCR(inhal) +RCR(derm). RCR(derm, local): dermal local long-term exposure. Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): 0.002 ; RCR(derm): 0.0003
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Proc 2	RCR(derm, local): 0.038 RCR(inhal): 0.199 ; RCR(derm): 0.002
Proc 3	RCR(derm, local): 0.154 RCR(inhal): 0.597 ; RCR(derm): 0.001
Proc 4	RCR(derm, local): 0.154 RCR(inhal): 0.697 ; RCR(derm): 0.010
Proc 8a	RCR(derm, local): 0.769 RCR(inhal): 0.199 ; RCR(derm): 0.021
Proc 8b	RCR(derm, local): 0.769 RCR(inhal): 0.697 ; RCR(derm): 0.021
Proc 9	RCR(derm, local): 0.769 RCR(inhal): 0.697 ; RCR(derm): 0.010
Proc 15	RCR(derm, local): 0.769 RCR(inhal): 0.697 ; RCR(derm): 0.001 RCR(derm, local): 0.077