

SAFETY DATA SHEET



n/i-C13/C15 Aldehyde
10380

Version / Revision 5
Supersedes Version 4.01***

Revision Date 01-Apr-2021
Issuing date 01-Apr-2021

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

1.1. Product identifier

Identification of the
substance/preparation

n/i-C13/C15 Aldehyde

Chemical Name Reaction mass of pentadecanal and tridecanal and 2-methyl dodecanal and 2-methyl tetradecanal
CAS-No _***
EC No. 931-038-4***
Registration number (REACH) 01-2119441590-45

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

Identified uses Formulation
Uses advised against 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)

Skin corrosion/irritation Category 2, H315
Skin sensitization Category 1, H317
Environmental hazard Aquatic Acute 1; H400
Aquatic Chronic 1; H410
M-Factor: 1 (self-classification)

Additional information

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

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2.2. Label elements

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

Hazard pictograms



Signal word

Warning

Hazard statements

H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H410: Very toxic to aquatic life with long lasting effects.

Precautionary statements

P261: Avoid breathing gas/mist/vapours.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
P391: Collect spillage.
P501: Dispose of contents/container in accordance with local regulation.

2.3. Other hazards

PBT and vPvB assessment

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

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	REACH-No	1272/2008/EC	Concentration (%)
Alkenes, C12-14, hydroformylation products, distn. lights	93821-14-8	01-2119441590-45	Skin Irrit. 2; H315 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor: 1 (self-classification)	> 96,5

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

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.

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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. Obtain medical attention.

Ingestion

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

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

Main symptoms

shortness of breath.

Special hazard

Lung oedema, 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. In case of lung irritation, first treatment with cortisone spray.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

alcohol-resistant 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

5.3. Advice for firefighters

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. Dike and collect water used to fight fire. Keep people away from and upwind of fire. Water run-off can cause environmental damage.



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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). Water runoff can cause environmental damage.

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. DO NOT use combustible materials such as sawdust. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. 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. Refill and handle product only in closed system.

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

acids and bases
amines
oxidizing agents

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.

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Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Handle under nitrogen, protect from moisture.

Temperature class

T3

7.3. Specific end use(s)

Formulation

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

No exposure limits established

Exposure limits UK

No exposure limits established.

DNEL & PNEC

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

Workers

DN(M)EL - long-term exposure - systemic effects - Inhalation	24 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	Hazard unknown (no further information necessary)
DN(M)EL - acute / short-term exposure - local effects - Inhalation	Hazard unknown (no further information necessary)
DN(M)EL - long-term exposure - systemic effects - Dermal	3,33 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
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	No hazard identified

General population

DN(M)EL - long-term exposure - systemic effects - Inhalation	5,8 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	Hazard unknown (no further information necessary)
DN(M)EL - acute / short-term exposure - local effects - Inhalation	Hazard unknown (no further information necessary)

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DN(M)EL - long-term exposure - systemic effects - Dermal	1,67 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
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	1,67 mg/kg bw/day
DN(M)EL - acute / short-term exposure - systemic effects - Oral	No hazard identified
DN(M)EL - local effects - eyes	No hazard identified

Environment

PNEC aqua - freshwater	0,8 µg/l
PNEC aqua - marine water	0,08 µg/l
PNEC aqua - intermittent releases	8 µg/l
PNEC STP	2,36 mg/l
PNEC sediment - freshwater	0,109 mg/kg dw
PNEC sediment - marine water	0,0109 mg/kg dw
PNEC Air	No hazard identified
PNEC soil	0,0212 mg/kg dw
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

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	nitrile rubber
Evaluation	according to EN 374: level 6

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Glove thickness	approx 0,55 mm
Break through time	> 480 min
Suitable material	polyvinylchloride
Evaluation	Information derived from practical experience
Glove thickness	approx 0,8 mm

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>.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	liquid
Colour	colourless
Odour	fruity
Odour threshold	No data available
pH	4,4 (0,002 g/l in water @ 20 °C (68 °F)) OECD 105
Melting point/range	-9 °C (Pour point) @ 1013 hPa
Method	DIN ISO 3016
Boiling point/range	263 - 286 °C @ 1013 hPa
Method	OECD 103
Flash point	122 °C @ 1013 hPa
Method	ISO 2719
Evaporation rate	No data available
Flammability (solid, gas)	Does not apply, the substance is a liquid
Lower explosion limit	No data available
Upper explosion limit	No data available

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
> 0.001	> 0.001	> 0.001	20	68	OECD 104
0.012	0.0012	> 0.001	50	122	OECD 104

Vapour density No data available

Relative density

Values	@ °C	@ °F	Method
0,830	20	68	DIN 51757

Solubility 0,002 g/l @ 20 °C, in water, OECD 105

log Pow 6,1 - 7,1 @ 25 °C (77 °F), OECD 117

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Autoignition temperature	215 °C @ 1001 hPa
Method	DIN 51794
Decomposition temperature	> 286 °C @ 1013 hPa
Viscosity	3,7 mPa*s @ 20 °C
Method	ASTM D445, dynamic
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

9.2. Other information

log Koc	3,12 @ 25°C (77 °F)
Surface tension	42,3 mN/m @ 20 °C (68 °F) @ 1,9 mg/l, OECD 115

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

May form explosive peroxides. When finely distributed, self-ignition is possible.

10.4. Conditions to avoid

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

10.5. Incompatible materials

bases, amines, acids, oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

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

Acute toxicity				
Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	> 5000 mg/kg	rat, male/female	OECD 401 read across

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Dermal	LD50	> 5000 mg/kg	rabbit	
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Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

Assessment

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

Acute oral toxicity

Acute dermal toxicity

For acute inhalation toxicity, no data are available

Irritation and corrosion

Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)

Target Organ Effects	Species	Result	Method	
Skin	rabbit	irritating	OECD 404	read across 4h
Eyes	rabbit	No eye irritation	OECD 405	read across

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

Assessment

The available data lead to the classification given in section 2

For respiratory irritation, no data are available

Sensitization

Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)

Target Organ Effects	Species	Evaluation	Method	
Skin	mouse	sensitizing	OECD 429	
Skin	human	not sensitizing	Patch-test	

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

Assessment

The available data lead to a classification as skin sensitizer (see section 2)

For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity

Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)

Type	Dose	Species	Method	
Subacute toxicity	NOAEL: 1000 mg/kg/d	rat, male/female	OECD 422	Oral

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

Assessment

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

STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity

Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)

Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative (without metabolic activation) negative (with metabolic activation)	OECD 471 (Ames)	In vitro study
Mutagenicity		human lymphocytes	negative (with metabolic activation)	OECD 487 micronucleus test	In vitro study

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			negative (without metabolic activation)		
Mutagenicity		V79 cells, Chinese hamster	negative (with metabolic activation) negative (without metabolic activation)	OECD 476 (Mammalian Gene Mutation) HPRT	In vitro study read across
Reproductive toxicity	NOAEL 1000 mg/kg/d	rat, 1. Generation, male/female		OECD 422, Oral	Reproductive toxicity: Fertility
Developmental Toxicity	NOAEL 1000 mg/kg/d	rat		OECD 422, Oral	Maternal toxicity, Fetal toxicity
Carcinogenicity	No data available				

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

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

Animal testing did not show any effects on fertility

No cancer study was conducted

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

Main symptoms

shortness of breath.

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

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>.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity			
Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)			
Species	Exposure time	Dose	Method
Danio rerio (Zebra fish)	96h	LC50: > 0,4 - < 0,9 mg/l	OECD 203
Activated sludge (domestic)	28 d	NOEC: 23,6 mg/l	OECD 310
Daphnia magna (Water flea)	48h	EC50: 1,54 mg/l	OECD 202 read across
Pseudokirchneriella subcapitata	72h	EC50: 4,5 mg/l (Growth rate)	OECD 201 read across

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Long term toxicity			
Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)			
Type	Species	Dose	Method
Aquatic toxicity	Pseudokirchneriella subcapitata	NOEC: 0,759 mg/l (3d) Growth rate	OECD 201 read across

12.2. Persistence and degradability

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

Biodegradation

65,4 % (21 d), activated sludge (domestic), non-adapted, aerobic, OECD 310.

Abiotic Degradation		
Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)		
Type	Result	Method
Photolysis	No data available	
Hydrolysis	not expected	

12.3. Bioaccumulative potential

Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)		
Type	Result	Method
log Pow	6,1 - 7,1 @ 25 °C (77 °F)	OECD 117
BCF	No data available	

12.4. Mobility in soil

Alkenes, C12-14, hydroformylation products, distn. lights (93821-14-8)		
Type	Result	Method
Surface tension	42,3 mN/m @ 20 °C (68 °F) @ 1,9 mg/l	OECD 115
Adsorption/Desorption	log koc: 3,12 @ 25 °C (77 °F)	calculated read across
Distribution to environmental compartments	no data available	

12.5. Results of PBT and vPvB assessment

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

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. Other adverse effects

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

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	UN 3082
14.2. UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (n/i-C13/C15-Aldehyde)
14.3. Transport hazard class(es)	9
14.4. Packing group	III
14.5. Environmental hazards	Fish and tree
14.6. Special precautions for user	
ADR Tunnel restriction code	(E)
Classification Code	M6
Hazard Number	90

ADN

14.1. UN number	UN 3082
14.2. UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (n/i-C13/C15-Aldehyde)
14.3. Transport hazard class(es)	9
14.4. Packing group	III
14.5. Environmental hazards	Fish and tree
14.6. Special precautions for user	
Classification Code	M6
Hazard Number	90

ICAO-TI / IATA-DGR

14.1. UN number	UN 3082
14.2. UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (n/i-C13/C15-Aldehyde)
14.3. Transport hazard class(es)	9
14.4. Packing group	III

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14.5. Environmental hazards Fish and tree
14.6. Special precautions for user no data available

IMDG

14.1. UN number UN 3082
14.2. UN proper shipping name Environmentally hazardous substance, liquid, n.o.s.
(n/i-C13/C15-Aldehyde)
14.3. Transport hazard class(es) 9
14.4. Packing group III
14.5. Environmental hazards
Marking Fish and tree
Marine pollutant yes
14.6. Special precautions for user
EmS F-A, S-F
14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code not applicable

SECTION 15: Regulatory information

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

Regulation 1272/2008, Annex VI

not listed

DI 2012/18/EU (Seveso III)

Category Annex I, part 1:
E1

DI 1999/13/EC (VOC Guideline)

Component	Status
Alkenes, C12-14, hydroformylation products, distn. lights CAS: 93821-14-8	not subject

International Inventories

Alkenes, C12-14, hydroformylation products, distn. lights, CAS: 93821-14-8

AICIS (AU)
EC-No. 2986992 (EU)
KECI KE-00631 (KR)
NZIoC-NZ May be used as single component chemical

National regulatory information Great Britain

Releases to air (Pollution Inventory Substances)

not subject

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Releases to water (Pollution Inventory Substances)

not subject

Releases to sewer (Pollution Inventory Substances)

not subject

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

H315: Causes skin irritation.

H317: May cause an allergic skin reaction.

H400: Very toxic to aquatic life.

H410: Very toxic to aquatic life with long lasting effects.

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).

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 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

A quantitative approach used to conclude safe use for:
Long-term Systemic effects via inhalation

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Long-term Systemic effects via skin
Environmental compartment
A qualitative approach used to conclude safe use for:
Acute local hazards via inhalation
Long term local hazards via inhalation
Long term local hazards via skin
Acute local hazards via skin
Local hazards via eyes

Operational conditions and risk management measures

Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Wear protective gloves
Following operational conditions and risk management measures, are based on qualitative risk characterisation:
Regular cleaning of equipment and work area
Substance/Task appropriate respirator, based on potential exposure to the use
Good standard of personal hygiene
Avoid contact with contaminated tools and objects.
Wear protective gloves and eye/face protection
Minimization of manual phases
Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
Skin coverage with appropriate barrier material based on potential for contact with chemicals

Exposure scenario identification

1 Formulation & (re)packing of substances and mixtures

Number of the ES 1

Short title of the exposure scenario

Formulation & (re)packing of substances and mixtures

List of use descriptors

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
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
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)
PROC14: production of preparations or articles by tableting, compression, extrusion, pelettisation
PROC15: Use as laboratory reagent

Environmental release categories [ERC]

ERC2: Formulation of preparations (mixtures)

Product characteristics

Refer to attached safety data sheets

Processes and activities covered by the exposure scenario

Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities

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Further explanations

Industrial use

Assessment tool used:

Chesar 3.2

liquid

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

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

Assumes an advanced standard of occupational Health and Safety Management System

Number of the contributing scenario 1
Contributing exposure scenario controlling environmental exposure for ERC 2

Further specification

assessment tool used: Chesar 2.3

Amounts used

Daily amount per site: 1 to

Annual amount per site: 100 to

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

Release fraction to air from process: 2.5%

Release fraction to wastewater from process: 2E-4%

Release fraction to soil from process: 0.01%

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

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 99.9 %

Conditions and measures related to municipal sewage treatment plant

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

The minimum grade of elimination in the sewage plant is (%): 88,62

Water flow in sewage/river (m³/day): 18000

Do not apply industrial sludge to natural soils

Conditions and measures related to external treatment of waste for disposal

Dispose of waste product or used containers according to local regulations

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

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor and outdoor 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) and eye protection.

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

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor and outdoor 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) and eye protection.

Number of the contributing scenario 4

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Contributing exposure scenario controlling worker exposure for PROC 3

Frequency and duration of use

8 h (full shift)

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) and eye protection.

Number of the contributing scenario

5

Contributing exposure scenario controlling worker exposure for PROC 4

Frequency and duration of use

8 h (full shift)

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) and eye protection.

Number of the contributing scenario

6

Contributing exposure scenario controlling worker exposure for PROC 5

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor and outdoor 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) and eye protection. Wear respiratory protection (Efficiency: 95 %).

Number of the contributing scenario

7

Contributing exposure scenario controlling worker exposure for PROC 8a

Frequency and duration of use

8 h (full shift)

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 chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Use suitable eye protection.

Number of the contributing scenario

8

Contributing exposure scenario controlling worker exposure for PROC 8b

Frequency and duration of use

8 h (full shift)

Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

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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

Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear respiratory protection (Efficiency: 95 %).

Number of the contributing scenario 9

Contributing exposure scenario controlling worker exposure for PROC 9

Frequency and duration of use

8 h (full shift)

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

Use suitable eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear respiratory protection (Efficiency: 90 %).

Number of the contributing scenario 10

Contributing exposure scenario controlling worker exposure for PROC 14

Frequency and duration of use

8 h (full shift)

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) and eye protection.

Number of the contributing scenario 11

Contributing exposure scenario controlling worker exposure for PROC 15

Frequency and duration of use

8 h (full shift)

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) and eye protection.

Environment

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

Fresh Water (Pelagic)	PEC: 1.15E-5 mg/l; RCR: 0.014
Fresh Water (Sediment)	PEC: 1.56E-3 mg/kg dw; RCR: 0.143
Marine Water (Pelagic)	PEC: 1.16E-6 mg/l; RCR: 0.014
Marine Water (Sediment)	PEC: 1.57E-4 mg/kg dw; RCR: 0.144
Agricultural Soil	PEC: 5.46E-4 mg/kg dw; RCR: 0.257
Sewage Treatment Plant (Effluent)	PEC: 1.14E-4 mg/l; RCR: < 0.01

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Human exposure prediction (oral, dermal, inhalative)

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

Proc 1	EE(inhal): 0.094; EE(derm): 0.034
Proc 2	EE(inhal): 9.433; EE(derm): 1.37
Proc 3	EE(inhal): 2.83; EE(derm): 0.69
Proc 4	EE(inhal): 4.717; EE(derm): 1.372
Proc 5	EE(inhal): 2.358; EE(derm): 2.742
Proc 8a	EE(inhal): 9.433; EE(derm): 1.371
Proc 8b	EE(inhal): 2.358; EE(derm): 1.371
Proc 9	EE(inhal): 0.472; EE(derm): 0.686
Proc 14	EE(inhal): 4.717; EE(derm): 0.686
Proc 15	EE(inhal): 4.717; EE(derm): 0.34

Risk characterisation

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): < 0.01; RCR(derm): 0.01
Proc 2	RCR(inhal): 0.393; RCR(derm): 0.411
Proc 3	RCR(inhal): 0.118; RCR(derm): 0.207
Proc 4	RCR(inhal): 0.197; RCR(derm): 0.412
Proc 5	RCR(inhal): 0.098; RCR(derm): 0.823
Proc 8a	RCR(inhal): 0.393; RCR(derm): 0.412
Proc 8b	RCR(inhal): 0.098; RCR(derm): 0.412
Proc 9	RCR(inhal): 0.02; RCR(derm): 0.206
Proc 14	RCR(inhal): 0.197; RCR(derm): 0.206
Proc 15	RCR(inhal): 0.197; RCR(derm): 0.102

Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Usage of release factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

associated uses:

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