1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : CASHMERAN
Registration number : 01-2119977131-40-0000
SDS Number : R00000215546

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

Use of the Substance/Mixture : GES1 Formulation of fragrance compounds (mixing of fragrance substances into fragrance compounds)
GES2 Formulation of fragranced end-products (mixing of fragrance compounds into fragranced end-products)
GES3 Industrial end-use of washing and cleaning products (on request available)
GES4 Professional end-use of washing and cleaning products (on request available)
GES5 Professional end-use of polishes and wax blends (on request available)

1.3 Details of the supplier of the safety data sheet

Company : IFF Benicarló, S.L.
Avda. Felipe Klein 2
12580 BENICARLÓ
Spain
Telephone : +34964470212
Telefax : +34964473411
E-mail address : sds@iff.com
Responsible/issuing person

1.4 Emergency telephone number

Refer to section 16 for country specific emergency contact number.

2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.
Skin sensitisation, Sub-category 1B	H317: May cause an allergic skin reaction.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin irritation, Category 2	H315: Causes skin irritation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Warning

Hazard statements	:		
		H315	Causes skin irritation.
		H317	May cause an allergic skin reaction.
		H319	Causes serious eye irritation.
		H411	Toxic to aquatic life with long lasting effects.

Precautionary statements	:		
		Prevention:	
		P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
		P273	Avoid release to the environment.
		P280	Wear protective gloves/ eye protection/ face protection.
		Response:	
		P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
		P337 + P313	If eye irritation persists: Get medical advice/ attention.
		P362 + P364	Take off contaminated clothing and wash it before reuse.

Hazardous components which must be listed on the label:
- 33704-61-9 Dihydro pentamethylindanone

2.3 Other hazards

3. Composition/information on ingredients

3.1 Substances

Chemical name of the substance : Dihydro pentamethylindanone
Chemical characterization : alicyclic ketones

Molecular formula : C14H22O
Molecular weight : 206,20 g/mol
CAS-No. : 33704-61-9
EINECS-No. : 251-649-3
REACH No. : 01-2119977131-40-0000

Hazardous components

Chemical name	CAS-No. EC-No.	GHS Classification	Concentration [%]
Dihydro pentamethylindanone	33704-61-9 251-649-3	Aquatic Chronic2; H411 Skin Sens.1B; H317 Eye Irrit.2; H319 Skin Irrit.2; H315	90 - 100

For the full text of the R-phrases mentioned in this Section, see Section 16.

3.2 Mixtures

Not applicable, product is a substance.

4. First aid measures

4.1 Description of first aid measures

General advice : Take Hazard and Precautionary phrases (section 2) into account.

If inhaled : Remove from exposure site to fresh air and keep at rest. If victim is unconscious, remove foreign bodies from the mouth. If victim has stopped breathing, give artificial respiration. Obtain medical advice.

In case of skin contact : Remove contaminated clothes. Wash thoroughly with water (and soap). Contact physician if symptoms persist.

In case of eye contact : Flush immediately with water for at least 15 minutes. Contact physician if symptoms persist.

If swallowed : Rinse mouth with water and obtain medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : No information available.

Risks : No information available.

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4.3 Indication of any immediate medical attention and special treatment needed

Treatment : No information available.

5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Carbondioxide, dry chemical, foam.

Unsuitable extinguishing media : Do not use a direct waterjet on burning material.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Water may be ineffective.

5.3 Advice for firefighters

Further information : Standard procedure for chemical fires.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Avoid inhalation and contact with skin and eyes. A self-contained breathing apparatus is recommended in case of a major spill.

6.2 Environmental precautions

Environmental precautions : Keep away from drains, surface- and groundwater and soil.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Clean up spillage promptly. Remove ignition sources. Provide adequate ventilation or exhaust. Avoid excessive inhalation of dust and vapours. Contain and recover free product. Dispose of according to the local regulations.

6.4 Reference to other sections

Prevent spreading over a wide area (e.g. by containment or oil barriers).

7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Avoid excessive inhalation of concentrated vapors. Follow good manufacturing practices for housekeeping and personal hygiene. Wash any exposed skin immediately after any chemical contact, before breaks and meals, and at the end of each work period. Contaminated clothing and shoes should be thoroughly cleaned before re-use. If appropriate, procedures used during the handling of this material should also be used when cleaning equipment or removing residual chemicals from tanks or other containers, especially when steam or hot water is used, as this may increase vapor concentrations in the workplace air. Where chemicals are openly handled, access should be restricted to properly trained employees. Keep all heated processes at the lowest necessary temperature in order to minimize emissions of volatile chemicals into the air.
Advice on protection against fire and explosion	:	Keep away from ignition sources and naked flame.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in a cool, dry, ventilated area away from heat sources. Keep containers upright and tightly closed when not in use.

7.3 Specific end use(s)

Specific use(s)	:	Industrial use, Professional use

8. Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

DNEL	:	End Use: Workers Exposure routes: Inhalation Potential health effects: Long-term systemic effects Value: 1,47 mg/m3
DNEL	:	End Use: Workers Exposure routes: Skin contact Potential health effects: Long-term systemic effects Value: 0,42 mg/kg bw/day

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DNEL	:	End Use: Workers Exposure routes: Skin contact Potential health effects: Long-term local effects Value: 0,00551 µg/cm²
PNEC	:	Fresh water Value: 0,004 mg/l
PNEC	:	Fresh water sediment Value: 99,1 µg/kg dw
PNEC	:	Marine water Value: 0,0004 mg/l
PNEC	:	Marine sediment Value: 9,91 µg/kg dw
PNEC	:	Sewage treatment plant Value: 10 mg/l
PNEC	:	Soil Value: 17,4 µg/kg dw
PNEC	:	Secondary Poisoning Value: 1,11 mg/kg

8.2 Exposure controls

Engineering measures

Where appropriate, use closed systems to transfer and process this material.
If appropriate, isolate mixing rooms and other areas where this material is used or openly handled. Maintain these areas under negative air pressure relative to the rest of the plant.

Personal protective equipment

Respiratory protection	:	Refer to attached exposure scenario in the Annex.
Hand protection	:	Refer to attached exposure scenario in the Annex.
Eye protection	:	Refer to attached exposure scenario in the Annex.

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Hygiene measures : To the extent deemed appropriate, implement pre-placement and regularly scheduled ascertainment of symptoms and spirometry testing of lung function for workers who are regularly exposed to this material.
To the extent deemed appropriate, use an experienced air sampling expert to identify and measure volatile chemicals that could be present in the workplace air to determine potential exposures and to ensure the continuing effectiveness of engineering controls and operational practices to minimize exposure.

Environmental exposure controls

General advice : Keep away from drains, surface- and groundwater and soil.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	solid
Colour	:	colorless to pale yellow
Odour	:	conforms to standard
Odour Threshold	:	not determined
Flash point	:	Note: Not applicable
Lower explosion limit	:	not determined
Upper explosion limit	:	not determined
Flammability (solid, gas)	:	The product is not flammable.
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Auto-ignition temperature	:	361 °C at 1.013 hPa Method: Tested according to Directive 92/69/EEC.
pH	:	not determined
Melting point	:	27 °Cat 1.013 hPa Method: OECD Test Guideline 102
Boiling point	:	220 °C at 1.013 hPa Method: OECD Test Guideline 103
Vapour pressure	:	Not applicable
Density	:	not determined

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Water solubility	:	49,1 g/l at 20 °C Method: OECD Test Guideline 105
Partition coefficient: n-octanol/water	:	log Pow: 4,2 at 20 °C Method: OECD Test Guideline 117
Solubility in other solvents	:	not determined
Viscosity, dynamic	:	31,649 mPa.s at 20 °C Method: OECD 114
Viscosity, kinematic	:	not determined
Relative vapour density	:	not determined
Surface tension	:	52,2 mN/m 44mg/l at 20 °C Method: OECD 115
Evaporation rate	:	not determined

9.2 Other information

Refractive index	:	not determined
Relative density	:	0,9550 - 0,9650

10. Stability and reactivity

10.1 Reactivity

No hazards to be specially mentioned.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Note: Presents no significant reactivity hazard, by itself or in contact with water. Avoid contact with strong acids, alkali or oxidizing agents.

10.4 Conditions to avoid

Conditions to avoid	:	Direct sources of heat.

10.5 Incompatible materials

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Materials to avoid : Avoid contact with strong acids, alkali or oxidizing agents.

10.6 Hazardous decomposition products

Hazardous decomposition products : Carbon monoxide and unidentified organic compounds may be formed during combustion.

11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity : LD50: 2.901 mg/kg
Species: Rat
Method: OECD Test Guideline 401

Acute inhalation toxicity : Remarks: not required

Acute dermal toxicity : LD50: 2.901 mg/kg
Remarks: estimated

Skin corrosion/irritation

Skin irritation : No information available.
Skin irritation : Species: human
Result: Skin irritation
Method: EPISKIN Human Skin Model Test
Exposure time: 0,25 h

Serious eye damage/eye irritation

No information available.
Eye irritation : Species: Chicken eye
Result: Eye irritation
Method: OECD 438

Respiratory or skin sensitisation

No information available.
Sensitisation : LLNA
Species: Mouse
Result: Skin sensitization
Method: OECD 429

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: repeated insult patch test
Species: Humans
Result: Does not cause skin sensitisation.
Test substance: 10.% in ethanol/DEP (75:25)

: Result: Does not cause respiratory sensitisation.

Germ cell mutagenicity

No information available.

Genotoxicity in vitro : Ames test
Salmonella typhimurium
Result: negative
Method: OECD Test Guideline 471

: In vitro mammalian cell gene mutation test
mouse lymphoma cells
Result: negative
Method: OECD Test Guideline 476

: in vitro mammalian cell micronucleus
Human lymphocytes
Result: negative
Method: OECD Test Guideline 473

Carcinogenicity

No information available.

Carcinogenicity : Species: Rat
Method: not required

Reproductive toxicity

No information available.

Target Organ Systemic Toxicant - Single exposure

No information available.

Target Organ Systemic Toxicant - Repeated exposure

No information available.

: Species: Rat, male and female
Application Route: Oral
Exposure time: 90-day ()
NOEL: 10 mg/kg
Method: OECD Test Guideline 408

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Aspiration hazard

No information available.

12. Ecological information

12.1 Toxicity

Toxicity to fish	:	LC50: 2,12 mg/l Exposure time: 96 h Species: Oryzias latipes (Japanese medaka) semi-static test
Toxicity to daphnia and other aquatic invertebrates	:	EC50: 1,5 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202
Toxicity to algae	:	EC50: 10 mg/l Exposure time: 72 h Species: Desmodesmus subspicatus (green algae) static test Method: OECD Test Guideline 201
	:	EC10: 6 mg/l Exposure time: 72 h Species: Desmodesmus subspicatus (green algae) Method: OECD Test Guideline 201

12.2 Persistence and degradability

No information available.

Biodegradability	:	Result: Not readily biodegradable. 0 % Method: OECD Test Guideline 301C

12.3 Bioaccumulative potential

No information available.

Bioaccumulation	:	Species: Cyprinus carpio (Carp) Exposure time: 60 d Bioconcentration factor (BCF): 157 Method: OECD Test Guideline 305

12.4 Mobility in soil

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

No information available.

13. Disposal considerations

13.1 Waste treatment methods

Product	:	Dispose of according to local regulations. Avoid disposing into drainage systems and into the environment.
Contaminated packaging	:	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

ADR

UN number	:	3077
Description of the goods	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DIHYDRO PENTAMETHYLINDANONE)
Labels	:	9
Packing group	:	III
Environmentally hazardous	:	yes

IATA

UN number	:	3077
Description of the goods	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DIHYDRO PENTAMETHYLINDANONE)
Labels	:	9
Packing group	:	III
Environmentally hazardous	:	yes

IMDG

UN number	:	3077
Description of the goods	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DIHYDRO PENTAMETHYLINDANONE)
Labels	:	9
Packing group	:	III
Marine pollutant	:	yes

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Special precautions for user : No special precautions required.

15. Regulatory information

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

Water contaminating class (Germany)	:	WGK 2water endangering Classification according to appendix 3

15.2 Chemical safety assessment

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

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.
H319	Causes serious eye irritation.
H411	Toxic to aquatic life with long lasting effects.

Further information

In December 2003, the National Institute for Occupational Safety and Health ("NIOSH") published an Alert on preventing lung disease in workers who use or make flavorings [NIOSH Publication Number 2004-110].
In August 2004, the United States Flavor and Extract Manufacturers Association (FEMA) issued a report entitled "Respiratory Safety in the Flavor Manufacturing Workplace".
Both of these reports provide recommendations for reducing employee exposure and for medical surveillance in the workplace. The recommendations in these reports are generally applicable to the use of any chemical in the workplace and you are strongly urged to review both of these reports.
The report published by FEMA also contains a list of "high priority" chemicals. If any of these chemicals are present in this product at a concentration >= 1.0% due to an intentional addition by IFF, the chemical(s) will be identified in this safety data sheet.

According to Regulation (EC) No. 1907/2006 the information in this safety data sheet is based on the properties of the material known to IFF at the time the data sheet was issued. The safety data sheet is intended to provide information for a health and safety assessment of the material and the circumstances, under which it is packaged, stored or applied in the workplace. For such a safety assessment International Flavors & Fragrances holds no responsibility. This document is not intended for quality assurance purposes.

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Emergency telephone number

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1. Short title of Exposure Scenario: GES1 Formulation of fragrance compounds (mixing of fragrance substances into fragrance compounds)

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**PROC 8b (IFRA F-1):** Material transfers from/to vessel/container at dedicated facility (IFRA F-1) **PROC 1 (IFRA F-2):** Storage (IFRA F-2) **PROC 3 (IFRA F-3):** Mixing operations (closed systems) in batch process including filling of equipment and sample collection (IFRA F-3) **PROC 5 (IFRA-F4):** Mixing operations (open systems) in batch process including filling of equipment and sample collection (IFRA F-4) **PROC 15 (IFRA F-5):** QC laboratory (IFRA F-5) **PROC 9 (IFRA F-6):** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (IFRA F-6) **PROC 8a:** Equipment cleaning and maintenance **PROC 8b (IFRA F-1):** Compound transfers from/to vessel/container at dedicated facility
Environmental release category	:	**spERC 2 IFRA 2.1a.v1:** Formulation of fragrance compounds at large medium sites **spERC IFRA 2.1b.v1:** Formulation of fragrance compounds at small sites

2.1 Contributing scenario controlling environmental exposure for: spERC 2 IFRA 2.1a.v1, spERC IFRA 2.1b.v1

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount used

Daily amount per site	:	33 kg (Large/medium site)
	:	16 kg (Small site)

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Annual amount per site	:	8200 kg (Large/medium site)
	:	4100 kg (Small site)

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d
Remarks	:	Large/medium site, Small site

Other given operational conditions affecting environmental exposure

Continuous exposure		
Number of emission days per year	:	250
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0,2 %
Emission or Release Factor: Soil	:	0 %
Remarks	:	Large/medium site
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Water	:	0,5 %
Emission or Release Factor: Soil	:	0 %
Remarks	:	Small site

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	6 %
Sludge Treatment	:	Can be landfilled, when in compliance with local regulations.
Remarks	:	Large/medium site, Small site

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of waste or used sacks/containers according to local regulations.
Remarks	:	Large/medium site, Small site

2.2 Contributing scenario controlling worker exposure for: PROC 8b (IFRA F-1)

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

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Frequency and duration of use

Remarks : Avoid carrying out activities involving exposure for more than 1 hour.

Human factors not influenced by risk management

Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
Room size	:	300 m3
Ventilation rate per hour	:	3
Remarks	:	Assumes activities are at room temperature.
Outdoor / Indoor	:	Outdoor
Remarks	:	Assumes activities are at room temperature.

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Advanced (industrial) exposure controles assumed., Use in semi-closed process with opportunity for exposure.

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls., Use suitable eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC 1 (IFRA F-2)

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Frequency and duration of use

Remarks : Avoid carrying out activities involving exposure for more than 1 hour.

Human factors not influenced by risk management

Exposed skin area : One hand face only (240 cm2)

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Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Remarks	:	Assumes process temperature up to 40 °C

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Use in closed process, no likelihood of exposure., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation)

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., No respiratory protection required.

2.4 Contributing scenario controlling worker exposure for: PROC 3 (IFRA F-3)

Product characteristics

Concentration of the Substance in Mixture/Article		Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Frequency and duration of use

Remarks	:	Avoid carrying out activities involving exposure for more than 4 hours.

Human factors not influenced by risk management

Exposed skin area	:	One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Room size	:	300 m3
Ventilation rate per hour	:	3
Remarks	:	Assumes activities are at room temperature.

Technical conditions and measures

Use in closed batch process (synthesis or formulation)., Medium level containment (Inh: 99%), Advanced (industrial) exposure controles assumed.

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented.

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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.

2.5 Contributing scenario controlling worker exposure for: PROC 5 (IFRA-F4)

Product characteristics

Concentration of the Substance in Mixture/Article		Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Frequency and duration of use

Remarks	:	Avoid carrying out activities involving exposure for more than 4 hours.

Human factors not influenced by risk management

Exposed skin area	:	Two hands face (480 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Room size	:	300 m3
Ventilation rate per hour	:	3
Remarks	:	Assumes activities are at room temperature.

Technical conditions and measures
Containment: No., Advanced (industrial) exposure controles assumed.

Organisational measures to prevent /limit releases, dispersion and exposure
Assumes a good basic standard of occupational hygiene is implemented.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls., Use suitable eye protection.

2.6 Contributing scenario controlling worker exposure for: PROC 15 (IFRA F-5)

Product characteristics

Concentration of the Substance in Mixture/Article		Covers the percentage of the substance in the product up to 100 % (unless stated differently).

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Frequency and duration of use

Remarks : Avoid carrying out activities involving exposure for more than 15 minutes.

Human factors not influenced by risk management

Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Remarks : Assumes process temperature up to 40 °C

Technical conditions and measures

Containment: No., Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., No respiratory protection required., Use suitable eye protection.

2.7 Contributing scenario controlling worker exposure for: PROC 9 (IFRA F-6)

Product characteristics

Concentration of the Substance in Mixture/Article : Concentration of substance in mixture <= 3.8%

Frequency and duration of use

Remarks : Avoid carrying out activities involving exposure for more than 1 hour.

Human factors not influenced by risk management

Exposed skin area : Two hands face (480 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Remarks : Assumes process temperature up to 40 °C

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Use in semi-closed process with

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opportunity for exposure., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., No respiratory protection required.

2.8 Contributing scenario controlling worker exposure for: PROC 8a

Product characteristics

Concentration of the Substance in Mixture/Article	Concentration of substance in mixture <= 3.8%

Frequency and duration of use

Remarks	:	Avoid carrying out activities involving exposure for more than 4 hours.

Human factors not influenced by risk management

Exposed skin area	:	Two hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Room size	:	300 m3
Ventilation rate per hour	:	3
Remarks	:	Assumes activities are at room temperature.

Technical conditions and measures

Advanced (industrial) exposure controles assumed., Containment: No.

Organisational measures to prevent /limit releases, dispersion and exposure

Assumes a good basic standard of occupational hygiene is implemented.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

2.9 Contributing scenario controlling worker exposure for: PROC 8b (IFRA F-1)

Product characteristics

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Concentration of the Substance in Mixture/Article: Concentration of substance in mixture <= 3.8%

Frequency and duration of use

Remarks : Avoid carrying out activities involving exposure for more than 1 hour.

Human factors not influenced by risk management

Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Remarks : Assumes process temperature up to 40 °C

Technical conditions and measures

Use in semi-closed process with opportunity for exposure., Advanced (industrial) exposure controles assumed.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., No respiratory protection required.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Fresh water		0,003mg/L	0,795
spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Fresh water sediment		0,075mg/kg dw	0,757
spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Marine water		0,3172µg/L	0,793

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spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Marine sediment		0,007mg/kg dw	0,756
spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Sewage treatment plant		0,031mg/L	< 0,01
spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Soil		0,014mg/kg dw	0,783
spERC IFRA 2.1b.v1	EUSES	Small site	Fresh water		0,004mg/L	0,989
spERC IFRA 2.1b.v1	EUSES	Small site	Fresh water sediment		0,093mg/kg dw	0,942
spERC IFRA 2.1b.v1	EUSES	Small site	Marine water		0,3947µg/L	0,987
spERC IFRA 2.1b.v1	EUSES	Small site	Marine sediment		0,009mg/kg dw	0,94
spERC IFRA 2.1b.v1	EUSES	Small site	Sewage treatment plant		0,039mg/L	< 0,01
spERC IFRA 2.1b.v1	EUSES	Small site	Soil		0,016mg/kg dw	0,939
ERC2	EUSES	Large/medium site	Predator (fresh water)		0,179mg/kg ww	0,162
spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Predator (marine water)		0,018mg/kg ww	0,016
spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Top predator (marine water)		0,004mg/kg ww	< 0,01
spERC 2 IFRA 2.1a.v1	EUSES	Large/medium site	Predator (terrestrial)		0,27mg/kg ww	0,243
spERC IFRA 2.1b.v1	EUSES	Small site	Predator (fresh water)		0,221mg/kg ww	0,199
spERC IFRA 2.1b.v1	EUSES	Small site	Predator (marine water)		0,022mg/kg ww	0,02
spERC	EUSES	Small site	Top predator		0,005mg/kg ww	< 0,01

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IFRA 2.1b.v1			(marine water)			
spERC IFRA 2.1b.v1	EUSES	Small site	Predator (terrestrial)		0,323mg/kg ww	0,291

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC 8b (IFRA F-1)	ART 1.5	Indoor	Inhalation, systemic, long-term	0,084 mg/m³	0,057
PROC 8b (IFRA F-1)	TRA Worker v3	Indoor	Dermal, systemic, long-term	0,274 mg/kg bw/day	0,653
PROC 8b (IFRA F-1)	TRA Worker v3	Indoor	Dermal, local, long-term	0,02 µg/cm²	< 0,01
PROC 8b (IFRA F-1)	ART 1.5	Outdoor	Inhalation, systemic, long-term	0,002 mg/m³	< 0,01
PROC 8b (IFRA F-1)	TRA Worker v3	Outdoor	Dermal, systemic, long-term	0,274 mg/kg bw/day	0,653
PROC 8b (IFRA F-1)	TRA Worker v3	Outdoor	Dermal, local, long-term	0,02 mg/cm2	< 0,01
PROC 1 (IFRA F-2)	TRA Worker v3		Inhalation, systemic, long-term	0,017 mg/m3	0,012
PROC 1 (IFRA F-2)	TRA Worker v3		Dermal, systemic, long-term	0,003 mg/kg bw/day	< 0,01
PROC 1 (IFRA F-2)	TRA Worker v3		Dermal, local, long-term	1,0 µg/cm2	< 0,01
PROC 3 (IFRA F-3)	ART 1.5		Inhalation, systemic, long-term	0,048 mg/m3	0,033
PROC 3 (IFRA F-3)	TRA Worker v3		Dermal, systemic, long-term	0,069 mg/kg bw/day	0,163
PROC 3 (IFRA F-3)	TRA Worker v3		Dermal, local, long-term	0,02 mg/cm2	< 0,01
PROC 5 (IFRA-F4)	ART 1.5		Inhalation, systemic, long-term	0,06 mg/m3	0,041
PROC 5 (IFRA-F4)	TRA Worker v3		Dermal, systemic, long-term	0,274 mg/kg bw/day	0,653
PROC 5 (IFRA-F4)	TRA Worker v3		Dermal, local, long-term	0,04 mg/cm2	< 0,01

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PROC 15 (IFRA F-5)	TRA Worker v3		Inhalation, systemic, long-term	0,43 mg/m3	0,292
PROC 15 (IFRA F-5)	TRA Worker v3		Dermal, systemic, long-term	0,034 mg/kg bw/day	0,082
PROC 15 (IFRA F-5)	TRA Worker v3		Dermal, local, long-term	0,01 mg/cm2	< 0,01
PROC 9 (IFRA F-6)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,327 mg/m3	0,222
PROC 9 (IFRA F-6)	Extended ECETOC TRA workers		Dermal, systemic, long-term	0,026 mg/kg bw/day	0,062
PROC 9 (IFRA F-6)	Extended ECETOC TRA workers		Dermal, local, long-term	3,8 µg/cm2	< 0,01
PROC 8a (IFRA F-7)	ART 1.5	manual equipment cleaning	Inhalation, systemic, long-term	0,4 mg/m3	0,272
PROC 8a (IFRA F-7)	Extended ECETOC TRA workers	manual equipment cleaning	Dermal, systemic, long-term	0,052 mg/kg bw/day	0,124
PROC 8a (IFRA F-7)	Extended ECETOC TRA workers	manual equipment cleaning	Dermal, local, long-term	3,8 µg/cm2	< 0,01
PROC 8a (IFRA F-7)	ART 1.5	Automatic equipment cleaning	Inhalation, systemic, long-term	0,18 mg/m3	0,122
PROC 8a (IFRA F-7)	ECETOC TRA	Automatic equipment cleaning	Dermal, systemic, long-term	0,052 mg/kg bw/day	0,124
PROC 8a (IFRA F-7)	ECETOC TRA	Automatic equipment cleaning	Dermal, local, long-term	3,8 µg/cm²	< 0,01
PROC 8b (IFRA F-1)	Extended ECETOC TRA workers	Compounds transfer	Inhalation, systemic, long-term	0,327 mg/m³	0,222
PROC 8b (IFRA F-1)	Extended ECETOC TRA workers	Compounds transfer	Dermal, systemic, long-term	0,052 mg/kg bw/day	0,124
PROC 8b (IFRA F-1)	Extended ECETOC TRA workers	Compounds transfer	Dermal, local, long-term	3,8 µg/cm²	< 0,01

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

As a downstream user your main obligations under REACH are to:

1. Check if your use is covered by the exposure scenario(s). If this is not the case, you can communicate with your supplier with the aim of having your use covered by an exposure scenario or you may develop your own chemical safety report;

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2.a. (Workers) Follow the instructions in this safety data sheet and the conditions of use indicated in the exposure scenario(s) in section 2.2. However, if you have another combination of operational conditions (OCs) and/or risk management measures (RMMs) which allow you to achieve the same level of safety (RCRs <1) you can use scaling to demonstrate that you are in compliance. If scaling is not possible or still results in RCRs >1 then you should implement the OCs and RMMs recommended in this exposure scenario or contact your Supplier in case you need further support;

2.b. (Environment) Follow the instructions in this safety data sheet and check if your daily and annual amounts used are below the default maximum values indicated in section 2.1. In case you are above the indicated values you can use scaling to demonstrate that you are in compliance, e.g. by replacing the default figure for the river and/or sewage treatment plant flow rates with the actual rates. Background information on PEC Regional freshwater is 5.368E-5 mg/L. If scaling is not possible or still results in RCRs >1, then you should contact your Supplier for further support;

3. Contact your Supplier if you have new information on the hazard of the substance or mixture or if you believe that the risk management measures are not appropriate;

4. Provide your own downstream users with information on hazards, safe conditions of use and appropriate risk management advice for your mixtures if you are a formulator.

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1. Short title of Exposure Scenario: GES2 Formulation of fragranced end-products (mixing of fragrance compounds into fragranced end-products)

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**PROC 8b (AISE M-6):** Material transfers from/to vessel/container at dedicated facility (AISE M-6) **PROC 15 (AISE M-9):** QC Laboratory (AISE M-9) **PROC 1 (AISE M-1):** Storage (AISE M-1) **PROC 3 (AISE M-3):** Mixing operations (closed systems) in batch process including filling of equipment and sample collection (AISE M-3) **PROC 5 (AISE M-5):** Mixing operations (open systems) in batch process including filling of equipment and sample collection (AISE M-5) **PROC 8a:** Equipment cleaning and maintenance **PROC 9 (AISE M-7):** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (AISE M-7) **PROC 14 (AISE M-8):** Production of mixtures or articles by tabletting, compression, extrusion or pelletisation (AISE M-8)
Environmental release category	:	**AISE 2.1.a,g:** spERC AISE Granular & Low Viscosity Liquids - large scale **CE 2.2.a-c:** spERC AISE & CE Fine Fragrances (cleaning with solvent) - all scales **AISE 2.1.b,h:** spERC AISE Granular & Low Viscosity Liquids - medium scale **CE 2.1.d-j:** GES2H default - all scales **AISE 2.1.c,i:** spERC AISE Granular & Low Viscosity Liquids - small scale **AISE 2.1.j CE/AISE 2.3a CE 2.1.a:** spERC AISE High Viscosity Liquids + CE/AISE Solid Products + CE Low Viscosity Liquids - large scale **AISE 2.1.k CE/AISE 2.3.b CE 2.1.b:** spERC AISE High Viscosity Liquids + CE/AISE Solid Products + CE Low Viscosity Liquids - medium scale **AISE 2.1.l CE/AISE 2.3.c CE 2.1.c:** spERC AISE High Viscosity Liquids + CE/AISE Solid Products + CE Low Viscosity Liquids - small scale

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2.1 Contributing scenario controlling environmental exposure for: AISE 2.1.a,g, AISE 2.1.b,h, AISE 2.1.c,i, AISE 2.1.j CE/AISE 2.3a CE 2.1.a, AISE 2.1.k CE/AISE 2.3.b CE 2.1.b, AISE 2.1.l CE/AISE 2.3.c CE 2.1.c, CE 2.2.a-c, CE 2.1.d-j

Product characteristics

Concentration of the Substance in Mixture/Article	:	Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Amount used

Daily amount per site	:	100 kg (AISE 2.1.a,g)
	:	40 kg (AISE 2.1.b,h)
	:	31 kg (AISE 2.1.c,i)
	:	30 kg (AISE 2.1.j CE/AISE 2.3.a CE 2.1.a)
	:	11 kg (AISE 2.1.k CE/AISE 2.3.b CE 2.1.b)
	:	9,4 kg (AISE 2.1.l CE/AISE 2.3.c CE 2.1.c)
	:	43 kg (CE 2.2.a-c)
	:	4 kg (CE 2.1.d-j)
Annual amount per site	:	25500 kg (AISE 2.1.a,g)
	:	9700 kg (AISE 2.1.b,h)
	:	7700 kg (AISE 2.1.c,i)
	:	7400 kg (AISE 2.1.j CE/AISE 2.3.a CE 2.1.a)
	:	2700 kg (AISE 2.1.k CE/AISE 2.3.b CE 2.1.b)
	:	2400 kg (AISE 2.1.l CE/AISE 2.3.c CE 2.1.c)
	:	10700 kg (CE 2.2.a-c)
	:	1000 kg (CE 2.1.d-j)

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d
Remarks	:	Large/medium site, Small site

Other given operational conditions affecting environmental exposure

Continuous exposure		
Number of emission days per year	:	250
Emission or Release Factor: Air	:	0 %
Emission or Release Factor: Soil	:	0 %
Remarks	:	Large/medium site, Small site

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Emission or Release Factor: Water	:	0,01 %
Remarks	:	AISE 2.1.a,g, AISE 2.1.b,h, AISE 2.1.j CE/AISE 2.3.a CE 2.1.a
Emission or Release Factor: Water	:	0,2 %
Remarks	:	AISE 2.1.c,i, AISE 2.1.k CE/AISE 2.3.b CE 2.1.b
Emission or Release Factor: Water	:	0,4 %
Remarks	:	AISE 2.1.l CE/AISE 2.3.c CE 2.1.c
Emission or Release Factor: Water	:	0 %
Remarks	:	CE 2.2.a-c
Emission or Release Factor: Water	:	2 %
Remarks	:	CE 2.1.d-j

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Effectiveness (of a measure)	:	6 %
Remarks	:	AISE 2.1.a,g, AISE 2.1.b,h, AISE 2.1.c,i, AISE 2.1.j CE/AISE 2.3.a CE 2.1.a, AISE 2.1.k CE/AISE 2.3.b CE 2.1.b, AISE 2.1.l CE/AISE 2.3.c CE 2.1.c, CE 2.1.d-j
Effectiveness (of a measure)	:	100 %
Remarks	:	CE 2.2.a-c

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of waste or used sacks/containers according to local regulations.
Remarks	:	Large/medium site, Small site

2.2 Contributing scenario controlling worker exposure for: PROC 8b (AISE M-6)

Product characteristics

Concentration of the Substance in Mixture/Article		Concentration of substance in mixture <= 3.8%

Frequency and duration of use

Remarks	:	Avoid carrying out activities involving exposure for more than 1

hour.

Human factors not influenced by risk management

Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Remarks : Assumes process temperature up to 40 °C

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Use in semi-closed process with opportunity for exposure., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation)

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., No respiratory protection required.

2.3 Contributing scenario controlling worker exposure for: PROC 15 (AISE M-9)

Product characteristics

Concentration of the Substance in Mixture/Article : Concentration of substance in mixture <= 3.8%

Frequency and duration of use

Remarks : Avoid carrying out activities involving exposure for more than 15 minutes.

Human factors not influenced by risk management

Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

Remarks : Assumes process temperature up to 40 °C

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation), Containment: No.

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Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., No respiratory protection required.

2.4 Contributing scenario controlling worker exposure for: PROC 1 (AISE M-1)

Product characteristics

Concentration of the Substance in Mixture/Article	Concentration of substance in mixture <= 3.8%

Frequency and duration of use

Remarks	:	Avoid carrying out activities involving exposure for more than 1 hour.

Human factors not influenced by risk management

Exposed skin area	:	One hand face only (240 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Remarks	:	Assumes process temperature up to 40 °C

Technical conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Use in closed process, no likelihood of exposure., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation)

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., No respiratory protection required.

2.5 Contributing scenario controlling worker exposure for: PROC 3 (AISE M-3)

Product characteristics

Concentration of the Substance in Mixture/Article	Concentration of substance in mixture <= 3.8%

Frequency and duration of use

Remarks	:	Avoid carrying out activities involving exposure for more than 4 hours.

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Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Remarks : Assumes process temperature up to 40 °C

Technical conditions and measures
Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Use in closed batch process (synthesis or formulation)., Indoor (No local exhaust ventilation), Advanced (industrial) exposure controles assumed.

Conditions and measures related to personal protection, hygiene and health evaluation
No respiratory protection required., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

2.6 Contributing scenario controlling worker exposure for: PROC 5 (AISE M-5)

Product characteristics
Concentration of the Substance in Mixture/Article : Concentration of substance in mixture <= 3.8%

Frequency and duration of use
Remarks : Avoid carrying out activities involving exposure for more than 4 hours.

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor use
Remarks : Assumes process temperature up to 40 °C

Technical conditions and measures
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) ., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation), Containment: No.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training., No respiratory

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protection required.

2.7 Contributing scenario controlling worker exposure for: PROC 8a

Product characteristics

Concentration of the Substance in Mixture/Article	Concentration of substance in mixture <= 0.228%

Frequency and duration of use

Remarks	:	Avoid carrying out activities involving exposure for more than 4 hours.

Human factors not influenced by risk management

Exposed skin area	:	Two hands (960 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Remarks	:	Assumes process temperature up to 40 °C

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Advanced (industrial) exposure controles assumed., Containment: No., Indoor (No local exhaust ventilation)

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

No dermal protection required., No respiratory protection required.

2.8 Contributing scenario controlling worker exposure for: PROC 9 (AISE M-7)

Product characteristics

Concentration of the Substance in Mixture/Article	Concentration of substance in mixture <= 0.228%

Frequency and duration of use

Remarks	:	Avoid carrying out activities involving exposure for more than 1 hour.

Human factors not influenced by risk management

Exposed skin area	:	Two hands (960 cm2)

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Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Remarks	:	Assumes process temperature up to 40 °C

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Use in semi-closed process with opportunity for exposure., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation)

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

No dermal protection required., No respiratory protection required.

2.9 Contributing scenario controlling worker exposure for: PROC 14 (AISE M-8)

Product characteristics

Concentration of the Substance in Mixture/Article	Concentration of substance in mixture <= 0.228%

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Exposed skin area	:	Two hands face (480 cm2)

Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor use
Remarks	:	Assumes process temperature up to 40 °C

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Advanced (industrial) exposure controles assumed., Indoor (No local exhaust ventilation), Containment: No.

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

No dermal protection required., No respiratory protection required.

3. Exposure estimation and reference to its source

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Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
AISE 2.1.a,g	EUSES	Large scale	Freshwater		0,5496µg/L	0,137
AISE 2.1.a,g	EUSES	Large scale	Fresh water sediment		0,013mg/kg dw	0,131
AISE 2.1.a,g	EUSES	Large scale	Marine water		0,0542mg/l	0,136
AISE 2.1.a,g	EUSES	Large scale	Marine sediment		0,001mg/kg dw	0,129
AISE 2.1.a,g	EUSES	Large scale	Predator (fresh water)		0,038mg/kg ww	0,034
AISE 2.1.a,g	EUSES	Large scale	Predator (marine water)		0,004mg/kg ww	< 0,01
AISE 2.1.a,g	EUSES	Large scale	Top predator (marine water)		0,002mg/kg ww	< 0,01
AISE 2.1.a,g	EUSES	Large scale	Sewage treatment plant		0,005mg/l	< 0,01
AISE 2.1.a,g	EUSES	Large scale	Soil		0,002mg/kg dw	0,111
AISE 2.1.a,g	EUSES	Large scale	Predator (terrestrial)		0,039mg/kg ww	0,035
AISE 2.1.b,h	EUSES	Medium scale	Fresh water		0,002mg/l	0,49
AISE 2.1.b,h	EUSES	Medium scale	Fresh water sediment		0,046mg/kg dw	0,466
AISE 2.1.b,h	EUSES	Medium scale	Marine water		0,1951µg/L	0,488
AISE 2.1.b,h	EUSES	Medium scale	Marine sediment		0,005mg/kg dw	0,465
AISE 2.1.b,h	EUSES	Medium scale	Predator (fresh water)		0,111mg/kg ww	0,1
AISE 2.1.b,h	EUSES	Medium scale	Predator (marine water)		0,011mg/kg ww	< 0,01
AISE 2.1.b,h	EUSES	Medium scale	Top predator (marine water)		0,003mg/kg ww	< 0,01
AISE 2.1.b,h	EUSES	Medium scale	Sewage treatment plant		0,019mg/l	< 0,01
AISE 2.1.b,h	EUSES	Medium scale	Soil		0,008mg/kg dw	0,443
AISE 2.1.b,h	EUSES	Medium scale	Predator (terrestrial)		0,152mg/kg ww	0,137
AISE 2.1.c,i	EUSES	Small scale	Fresh water		0,003mg/l	0,748

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AISE 2.1.c,i	EUSES	Small scale	Fresh water sediment		0,071mg/kg dw	0,712
AISE 2.1.c,i	EUSES	Small scale	Marine water		0,2984µg/L	0,746
AISE 2.1.c,i	EUSES	Small scale	Marine sediment		0,007mg/kg dw	0,711
AISE 2.1.c,i	EUSES	Small scale	Predator (fresh water)		0,168mg/kg ww	0,152
AISE 2.1.c,i	EUSES	Small scale	Predator (marine water)		0,017mg/kg ww	0,015
AISE 2.1.c,i	EUSES	Small scale	Top predator (marine water)		0,004mg/kg ww	< 0,01
AISE 2.1.c,i	EUSES	Small scale	Sewage treatment plant		0,029mg/l	< 0,01
AISE 2.1.c,i	EUSES	Small scale	Soil		0,012mg/kg dw	0,686
AISE 2.1.c,i	EUSES	Small scale	Predator (terrestrial)		0,236mg/kg ww	0,212
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Fresh water		0,001mg/l	0,372
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Fresh water sediment		0,035mg/kg dw	0,355
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Marine water		0,1482µg/L	0,37
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Marine sediment		0,003mg/kg dw	0,353
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Predator (fresh water)		0,087mg/kg ww	0,078
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Predator (marine water)		0,009mg/kg ww	< 0,01
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Top predator (marine water)		0,003mg/kg ww	< 0,01
AISE 2.1.j	EUSES	Large scale	Sewage		0,014mg/l	< 0,01

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CE/AISE 2.3a CE 2.1.a			treatment plant			
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Soil		0,006mg/kg dw	0,332
AISE 2.1.j CE/AISE 2.3a CE 2.1.a	EUSES	Large scale	Predator (terrestrial)		0,115mg/kg ww	0,103
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Fresh water		0,001mg/l	0,278
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Fresh water sediment		0,026mg/kg dw	0,265
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Marine water		0,1106µg/L	0,276
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Marine sediment		0,003mg/kg dw	0,263
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Predator (fresh water)		0,067mg/kg ww	0,06
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Predator (marine water)		0,007mg/kg ww	< 0,01
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Top predator (marine water)		0,002mg/kg ww	< 0,01
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Sewage treatment plant		0,01mg/l	< 0,01
AISE 2.1.k CE/AISE	EUSES	Medium scale	Soil		0,004mg/kg dw	0,244

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2.3.b CE 2.1.b						
AISE 2.1.k CE/AISE 2.3.b CE 2.1.b	EUSES	Medium scale	Predator (terrestrial)		0,084mg/kg ww	0,076
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Fresh water		0,002mg/l	0,46
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Fresh water sediment		0,043mg/kg dw	0,439
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Marine water		0,1835µg/L	0,459
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Marine sediment		0,004mg/kg dw	0,437
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Predator (fresh water)		0,108mg/kg ww	0,097
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Predator (marine water)		0,011mg/kg ww	< 0,01
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Top predator (marine water)		0,003mg/kg ww	< 0,01
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Sewage treatment plant		0,018mg/l	< 0,01
AISE 2.1.l CE/AISE 2.3.c CE 2.1.c	EUSES	Small scale	Soil		0,007mg/kg dw	0,415
AISE 2.1.l CE/AISE 2.3.c CE	EUSES	Small scale	Predator (terrestrial)		0,143mg/kg ww	0,129

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2.1.c						
CE 2.2.a-c	EUSES	all scales	Fresh water		0,0799µg/L	0,02
CE 2.2.a-c	EUSES	all scales	Fresh water sediment		0,002mg/kg dw	0,019
CE 2.2.a-c	EUSES	all scales	Marine water		0,0073µg/L	0,018
CE 2.2.a-c	EUSES	all scales	Marine sediment		0,1715µg/kg dw	0,017
CE 2.2.a-c	EUSES	all scales	Predator (fresh water)		0,013mg/kg ww	0,011
CE 2.2.a-c	EUSES	all scales	Predator (marine water)		0,001mg/kg ww	< 0,01
CE 2.2.a-c	EUSES	all scales	Top predator (marine water)		0,001mg/kg ww	< 0,01
CE 2.2.a-c	EUSES	all scales	Sewage treatment plant		0mg/l	< 0,01
CE 2.2.a-c	EUSES	all scales	Soil		0,0044µg/kg dw	< 0,01
CE 2.2.a-c	EUSES	all scales	Predator (terrestrial)		0,001mg/kg dw	< 0,01
CE 2.1.d-j	EUSES	all scales	Fresh water		0,004mg/l	0,959
CE 2.1.d-j	EUSES	all scales	Fresh water sediment		0,091mg/kg dw	0,914
CE 2.1.d-j	EUSES	all scales	Marine water		0,383µg/L	0,958
CE 2.1.d-j	EUSES	all scales	Marine sediment		0,009mg/kg dw	0,912
CE 2.1.d-j	EUSES	all scales	Predator (fresh water)		0,217mg/kg ww	0,195
CE 2.1.d-j	EUSES	all scales	Predator (marine water)		0,022mg/kg ww	0,019
CE 2.1.d-j	EUSES	all scales	Top predator (marine water)		0,005mg/kg ww	< 0,01
CE 2.1.d-j	EUSES	all scales	Sewage treatment plant		0,038mg/l	< 0,01
CE 2.1.d-j	EUSES	all scales	Soil		0,015mg/kg dw	0,885
CE 2.1.d-j	EUSES	all scales	Predator (terrestrial)		0,304mg/kg ww	0,274

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):

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PROC 8b (AISE M-6)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,327 mg/m³	0,222
PROC 8b (AISE M-6)	Extended ECETOC TRA workers		Dermal, systemic, long-term	0,052 mg/kg bw/day	0,124
PROC 8b (AISE M-6)	Extended ECETOC TRA workers		Dermal, local, long-term	3,8 µg/cm²	< 0,01
PROC 15 (AISE M-9)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,163 mg/m³	0,111
PROC 15 (AISE M-9)	Extended ECETOC TRA workers		Dermal, systemic, long-term	0,001 mg/kg bw/day	< 0,01
PROC 15 (AISE M-9)	Extended ECETOC TRA workers		Dermal, local, long-term	0,38 µg/cm²	< 0,01
PROC 1 (AISE M-1)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,0007 mg/m³	< 0,01
PROC 1 (AISE M-1)	Extended ECETOC TRA workers		Dermal, systemic, long-term	0,0001 mg/kg bw/day	< 0,01
PROC 1 (AISE M-1)	Extended ECETOC TRA workers		Dermal, local, long-term	0,038 µg/cm²	< 0,01
PROC 3 (AISE M-3)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,588 mg/m³	0,4
PROC 3 (AISE M-3)	Extended ECETOC TRA workers		Dermal, systemic, long-term	0,003 mg/kg bw/day	< 0,01
PROC 3 (AISE M-3)	Extended ECETOC TRA workers		Dermal, local, long-term	0,76 µg/cm²	< 0,01
PROC 5 (AISE M-5)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,686 mg/m³	0,467
PROC 5 (AISE M-5)	Extended ECETOC TRA workers		Dermal, systemic, long-term	0,052 mg/kg bw/day	0,124
PROC 5 (AISE M-5)	Extended ECETOC TRA workers		Dermal, local, long-term	7,6 µg/cm²	< 0,01
PROC 8a (IFRA F-7)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,118 mg/m³	0,08
PROC 8a (IFRA F-7)	Extended ECETOC TRA workers		Dermal, systemic, long-term	0,031 mg/kg bw/day	0,075
PROC 8a (IFRA F-7)	Extended ECETOC TRA workers		Dermal, local, long-term	2,28 µg/cm²	< 0,01
PROC 9 (AISE M-7)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,02 mg/m³	0,013
PROC 9 (AISE M-7)	Extended ECETOC TRA workers		Dermal, systemic, long-term	0,016 mg/kg bw/day	0,037
PROC 9 (AISE M-7)	Extended ECETOC TRA workers		Dermal, local, long-term	2,28 µg/cm²	< 0,01
PROC 14 (AISE M-8)	Extended ECETOC TRA workers		Inhalation, systemic, long-term	0,098 mg/m³	0,067

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PROC 14 (AISE M-8)	Extended ECETOC TRA workers		Dermal, local, long-term	0,008 mg/kg bw/day	0,019
PROC 14 (AISE M-8)	Extended ECETOC TRA workers		Dermal, local, long-term	1,14 µg/cm²	< 0,01

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

As a downstream user your main obligations under REACH are to:

1. Check if your use is covered by the exposure scenario(s). If this is not the case, you can communicate with your supplier with the aim of having your use covered by an exposure scenario or you may develop your own chemical safety report;

2.a. (Workers) Follow the instructions in this safety data sheet and the conditions of use indicated in the exposure scenario(s) in section 2.2. However, if you have another combination of operational conditions (OCs) and/or risk management measures (RMMs) which allow you to achieve the same level of safety (RCRs <1) you can use scaling to demonstrate that you are in compliance. If scaling is not possible or still results in RCRs >1 then you should implement the OCs and RMMs recommended in this exposure scenario or contact your Supplier in case you need further support;

2.b. (Environment) Follow the instructions in this safety data sheet and check if your daily and annual amounts used are below the default maximum values indicated in section 2.1. In case you are above the indicated values you can use scaling to demonstrate that you are in compliance, e.g. by replacing the default figure for the river and/or sewage treatment plant flow rates with the actual rates. Background information on PEC Regional freshwater is 5.368E-5 mg/L. If scaling is not possible or still results in RCRs >1, then you should contact your Supplier for further support;

3. Contact your Supplier if you have new information on the hazard of the substance or mixture or if you believe that the risk management measures are not appropriate;

4. Provide your own downstream users with information on hazards, safe conditions of use and appropriate risk management advice for your mixtures if you are a formulator.

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