

Product : DAMASCONE DELTA BHT

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

1.1 Product identifier

Trade name : DAMASCONE DELTA BHT
 Registration number : 01-2119535122-53-0000
 MSDS Number : R00000218958
 Substance name : [1alpha(E),2beta]-1-(2,6,6-Trimethylcyclohex-3-en-1-yl)but-2-en-1-one
 Substance No. : 275-156-8

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

Use of the Substance/Mixture : Ingredient used in Flavour and/or Fragrance preparations

1.3 Details of the supplier of the safety data sheet

Company : IFF (GREAT BRITAIN) LTD.
 DUDDERY HILL
 CB9 8LG HAVERHILL
 Telephone : +441440715000
 Telefax : +441440762199
 E-mail address : sds@iff.com
 Responsible/issuing person

1.4 Emergency telephone number

+44 1440 7 15000

2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

| | |
|--------------------------------------|---|
| Acute toxicity, Category 4 | H302: Harmful if swallowed. |
| Skin irritation, Category 2 | H315: Causes skin irritation. |
| Skin sensitisation, Sub-category 1A | H317: May cause an allergic skin reaction. |
| Acute aquatic toxicity, Category 1 | H400: Very toxic to aquatic life. |
| Chronic aquatic toxicity, Category 1 | H410: Very toxic to aquatic life with long lasting effects. |

2.2 Label elements

Classification (REGULATION (EC) No 1272/2008)

Hazard pictograms :



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Signal word : Warning

Hazard statements : H302 Harmful if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Hazardous components which must be listed on the label:

- 57378-68-4, 71048-82-3 Delta-Damascone

2.3 Other hazards

None reasonably foreseeable.

3. Composition/information on ingredients

3.1 Substances

Chemical name of the substance : [1alpha(E),2beta]-1-(2,6,6-Trimethylcyclohex-3-en-1-yl)but-2-en-1-one

Chemical characterization : alicyclic ketones

Molecular weight : 192,30 g/mol

CAS-No. : 57378-68-4, 71048-82-3

EINECS-No. : 275-156-8

REACH No. : 01-2119535122-53-0000

Hazardous components

| Chemical Name | CAS-No. EC-No. | GHS Classification | Concentration [%] |
|---|-------------------------------------|---|-------------------|
| [1alpha(E),2beta]-1-(2,6,6-Trimethylcyclohex-3-en-1-yl)but-2-en-1-one | 57378-68-4, 71048-82-3 275-156-8 | Acute Tox.4; H302 Skin Irrit.2; H315 Skin Sens.1A; H317 Aquatic Chronic1; H410 Aquatic Acute1; H400 | 50 - 100 |

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| | | | |
|----------------------------|-----------------------|--|------------|
| 2,6-di-tert-butyl-p-cresol | 128-37-0 204-881-4 | Aquatic Chronic1; H410 Aquatic Acute1; H400 | 0,1 - 0,25 |
|----------------------------|-----------------------|--|------------|

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 Risk and Safety phrases (section 15) into account.
- If inhaled : Remove from exposure site to fresh air and keep at rest. 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.

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

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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. Avoid excessive inhalation of vapours. Gross spillages should be contained by use of sand or inert powder and disposed 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.

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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) : No information available.

8. Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

DNEL : End Use: Workers
Exposure routes: Skin contact
Potential health effects: Local effects, Acute effects
Exposure time: 8 h
Value: 0,014 mg/cm²

DNEL : End Use: Workers
Exposure routes: Skin contact
Potential health effects: Chronic effects
Exposure time: 8 h
Value: 0,4 mg/kg bw/day

DNEL : End Use: Workers
Exposure routes: Inhalation
Potential health effects: Chronic effects
Exposure time: 8 h
Value: 1,5 mg/m³

PNEC : Fresh water
Value: 0,007 mg/l

PNEC : Marine water
Value: 0,0007 mg/l

PNEC : Fresh water sediment
Value: 0,906 mg/kg

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PNEC : Marine sediment
Value: 0,0906 mg/kg

PNEC : Soil
Value: 0,177 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 : Use local exhaust ventilation around open tanks and other open sources of potential exposures in order to avoid excessive inhalation, including places where this material is openly weighed or measured. In addition, use general dilution ventilation of the work area to eliminate or reduce possible worker exposures.
No respiratory protection is required during normal operations in a workplace where engineering controls such as adequate ventilation, etc. are sufficient.

If engineering controls and safe work practices are not sufficient, an approved, properly fitted respirator with organic vapor cartridges or canisters and particulate filters should be used:

- a) while engineering controls and appropriate safe work practices and/or procedures are being implemented; or
- b) during short term maintenance procedures when engineering controls are not in normal operation or are not sufficient; or
- c) if normal operational workplace vapor concentration in the air is increased due to heat ;
- d) during emergencies; or
- e) if engineering controls and operational practices are not sufficient to reduce airborne concentrations below an established occupational exposure limit.

Hand protection : Avoid skin contact. Use chemically resistant gloves.

Eye protection : Use tight-fitting goggles, face shield or safety glasses with side shields if eye contact might occur.

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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 : liquid

Colour : colorless to pale yellow

Odour : not determined

Odour : conforms to standard

Odour Threshold : not determined

Flash point : 103 °C at 1.013 hPa

Lower explosion limit : not determined

Upper explosion limit : not determined

Flammability (solid, gas) : not determined

Oxidizing properties : not determined

Auto-ignition temperature : not determined

Auto-ignition temperature : 280 °C at 1.013 hPa
Method: Tested according to Annex V of Directive 67/548/EEC.

pH : not determined

Melting point : not determined

Boiling point : not determined

Vapour pressure : not determined

Vapour pressure : 0,0272 hPa at 23 °C
Method: Purge & Trap

Density : not determined

Water solubility : not determined

Water solubility : 0,0772 g/l at 20 °C
Method: Tested according to Annex V of Directive 67/548/EEC.

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Partition coefficient: n-octanol/water : not determined
Partition coefficient: n-octanol/water : log Pow: 4,200
Solubility in other solvents : not determined
Viscosity, dynamic : not determined
Viscosity, kinematic : not determined
Relative vapour density : not determined
Evaporation rate : not determined

9.2 Other information

Refractive index : not determined
Relative density : 0,928 - 0,933 at 20 °C
Method: ISO 279

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

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

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Acute oral toxicity : LD50: 1.400 mg/kg
Species: Mouse
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50: > 5.000 mg/kg
Species: Rabbit
Method: OECD Test Guideline 402

Skin corrosion/irritation

Skin irritation : No information available.
Skin irritation : Species: human
Result: irritating
Method: Tested according to Annex V of Directive 67/548/EEC.
Exposure time: 42 h

Serious eye damage/eye irritation

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

Respiratory or skin sensitisation

No information available.
Sensitisation : LLNA
Species: Mouse
Result: Causes sensitisation.
Method: OECD 429

Germ cell mutagenicity

No information available.
Genotoxicity in vitro : Ames test
Result: negative
Method: Mutagenicity (Escherichia coli - reverse mutation assay)

Genotoxicity in vivo : in vivo assay
Species: Mouse
Method: Mutagenicity (in vivo mammalian bone-marrow
cytogenetic test, chromosomal analysis)
Result: negative

Carcinogenicity

No information available.

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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 ()
Number of exposures: 1x /day
NOAEL: 30 mg/kg
Method: OECD 408

: Exposure routes: Inhalation
Remarks: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

No information available.

12. Ecological information

12.1 Toxicity

Toxicity to fish : LC50: 0,97 mg/l
Exposure time: 96 h

Species: Oryzias latipes (Orange-red killifish)
semi-static test Method: OECD Test Guideline 203

Toxicity to algae : EbC50: 2,47 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Growth inhibition Method: OECD Test Guideline 201

: ErC50: 4,54 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Growth inhibition Method: OECD Test Guideline 201

: NOEC: 0,883 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Growth inhibition Method: OECD Test Guideline 201

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Toxicity to bacteria : EC50: 241 mg/l
Exposure time: 3 h
Respiration inhibition
Method: OECD 209

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0,35 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
semi-static test
Method: OECD 211

12.2 Persistence and degradability

No information available.

Biodegradability : aerobic
Result: Not readily biodegradable.
16 %
Method: OECD 301 C

12.3 Bioaccumulative potential

No information available.

Bioaccumulation : Species: Cyprinus carpio (Carp)
Exposure time: 60 d
Temperature: 25 °C
Bioconcentration factor (BCF): 58,3
Method: OECD 305

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

No information available.

This substance is not considered to be persistent, bioaccumulating and toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

No information available.

13. Disposal considerations

13.1 Waste treatment methods

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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 : 3082
Description of the goods : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-2-buten-1-one)
Labels : 9
Packing group : III
Environmentally hazardous : yes

IATA

UN number : 3082
Description of the goods : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-2-buten-1-one)
Labels : 9
Packing group : III
Environmentally hazardous : yes

IMDG

UN number : 3082
Description of the goods : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(1-(2,6,6-trimethyl-3-cyclohexen-1-yl)-2-buten-1-one)
Labels : 9
Packing group : III
Marine pollutant : yes

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 : WGK 2 water endangering
(Germany)

15.2 Chemical Safety Assessment

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

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16. Other information

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

| | |
|------|---|
| H302 | Harmful if swallowed. |
| 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. |

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 $\geq 1.0\%$ 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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ANNEX

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1. **GES1 Formulation of fragrance compounds (mixing of fragrance substances into fragrance compounds), GES2 Formulation of fragranced end-products**

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1. Short title of Exposure Scenario: GES1 Formulation of fragrance compounds (mixing of fragrance substances into fragrance compounds), GES2 Formulation of fragranced end-products

| | |
|--------------------------------|--|
| Main User Groups | : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Process category | : 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) PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) Materials transfers w. sample collection: PROC8a (Materials transfers with sample collection) Drum/batch transfers: PROC8a/b (Drum/batch transfers) Equipment cleaning and maintenance: PROC8a (Equipment cleaning and maintenance) Drum and small package filling: PROC8a/b (Drum and small package filling) PROC15: Use as laboratory reagent |
| Environmental release category | : ERC2: Formulation of preparations (generic large/medium sites) ERC2: Formulation of preparations (generic small sites) |

2.1 Contributing scenario controlling environmental exposure for: ERC2

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

Annual amount per site : 15.000 kg (Small site)
 Annual amount per site : 184.000 kg (Large/medium site)

Environment factors not influenced by risk management

Flow rate : 18.000 m³/d
 Dilution Factor (River) : 10
 Dilution Factor (Coastal Areas) : 100

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Other given operational conditions affecting environmental exposure

Continuous use/release
 Number of emission days per year : 250
 Emission or Release Factor: Air : 0,25 %
 Emission or Release Factor: Water : 0,5 %
 Emission or Release Factor: Soil : 0,01 %

Technical conditions and measures / Organizational measures

Water : If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. (Small site) (Effectiveness:)
 Reduction and cleaning of waste water:
 - Physical-chemical, distillation, and/or
 - Chemical treatment, oxidation, and/or
 - Chemical treatment, wet-air oxidation, and/or
 - Chemical treatment, supercritical water oxidation, and/or
 - Chemical treatment, reduction, and/or
 - Chemical treatment, incineration, and/or
 - Biological treatment, aerobic.
 (Large/medium site) (Effectiveness:)

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
 Effectiveness (of a measure) : 19 %
 Remarks : Small site
 Type of Sewage Treatment Plant : Onsite sewage treatment plant
 Effectiveness (of a measure) : 95 %
 Sludge Treatment : Sludge should be incinerated, contained or reclaimed.
 Remarks : Large/medium site

Conditions and measures related to external treatment of waste for disposal

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations., External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1

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

Frequency of use : Up to 8 hours/day

Organisational measures to prevent /limit releases, dispersion and exposureNo specific measures identified.

2.2 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Technical conditions and measures

Provide extraction ventilation at points where emissions occur.

Conditions and measures related to personal protection, hygiene and health evaluationWear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

2.2 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

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

Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Technical conditions and measures

Provide extraction ventilation at points where emissions occur.

Organisational measures to prevent /limit releases, dispersion and exposureAvoid carrying out activities involving exposure for more than 1 hour.; or Wear a respirator conforming to EN140

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with Type A filter or better.

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

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

2.2 Contributing scenario controlling worker exposure for: PROC5

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Technical conditions and measures

Provide extraction ventilation at points where emissions occur.

Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out activities involving exposure for more than 15 minutes (undiluted; concentration 100%).
Avoid carrying out activities involving exposure for more than 1 hour (diluted; concentration <25%).

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.

2.2 Contributing scenario controlling worker exposure for: PROC8a, Materials transfers w. sample collection

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Technical conditions and measures

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Presence of a controlled ventilation system (10-15 air changes/hr).

Organisational measures to prevent /limit releases, dispersion and exposure

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

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., Wear a respirator conforming to EN140 with Type A filter or better.

2.2 Contributing scenario controlling worker exposure for: PROC8a, Drum/batch transfers

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Organisational measures to prevent /limit releases, dispersion and exposure

Limit the substance content in the product to 0.55 %

2.2 Contributing scenario controlling worker exposure for: PROC8a, Equipment cleaning and maintenance

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Technical conditions and measures

Drain down and flush system prior to equipment opening or maintenance.

Organisational measures to prevent /limit releases, dispersion and exposure

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

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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 intensive management supervision controls., Wear a respirator conforming to EN140 with Type A filter or better.

2.2 Contributing scenario controlling worker exposure for: PROC8b, Materials transfers w. sample collection

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Technical conditions and measures

Provide extraction ventilation at points where emissions occur.

Organisational measures to prevent /limit releases, dispersion and exposure

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

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.

2.2 Contributing scenario controlling worker exposure for: PROC8b, Drum/batch transfers, Drum and small package filling

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Organisational measures to prevent /limit releases, dispersion and exposure

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Limit the substance content in the product to 0.55 %

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
 Physical Form (at time of use) : Liquid substance

Frequency and duration of use

Frequency of use : Up to 8 hours/day

Organisational measures to prevent /limit releases, dispersion and exposure

Handle in a fume cupboard or under extract ventilation.; or Avoid carrying out activities involving exposure for more than 15 minutes and wear a respirator conforming to EN140 with Type A filter or better.

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

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

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): |
|-----------------------|----------------------------|---------------------|----------------------|------------|-------------------|---|
| ERC2 | EUSES | | Fresh water | | 0,074kg/day | 0,453 |
| ERC2 | EUSES | | Fresh water sediment | | 0,074kg/day | 0,452 |
| ERC2 | EUSES | | Marine water | | 0,074kg/day | 0,453 |
| ERC2 | EUSES | | Marine sediment | | 0,074kg/day | 0,452 |
| ERC2 | EUSES | Small site | Air | | 0,15kg/day | |
| ERC2 | EUSES | Large/medium site | Air | | 1,84kg/day | |
| ERC2 | EUSES | | Soil | | 0kg/day | 0,028 |

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Workers

| Contributing Scenario | Exposure Assessment Method | Specific conditions | Value type | Level of Exposure | Risk characterisation ratio (PEC/PNEC): |
|-----------------------|----------------------------|--|---------------------------------|------------------------|---|
| PROC1 | ECETOC TRA | | Dermal, local, acute | 10 µg/cm ² | 0,09 |
| PROC2 | ECETOC TRA | | Dermal, local, acute | 10 µg/cm ² | 0,17 |
| PROC1 | ECETOC TRA | | Inhalation, systemic, long-term | 0,08 mg/m ³ | 0,05 |
| PROC2 | ECETOC TRA | | Inhalation, systemic, long-term | 0,79 mg/m ³ | 0,53 |
| PROC3 | ECETOC TRA | | Inhalation, systemic, long-term | 0,47 mg/m ³ | 0,31 |
| PROC15 | ECETOC TRA | | Inhalation, systemic, long-term | 0,39 mg/m ³ | 0,26 |
| PROC1 | ECETOC TRA | | Dermal, systemic, long-term | 0,03 mg/kg bw/day | 0,71 |
| PROC5 | ECETOC TRA | | Dermal, local, acute | 4 µg/cm ² | 0,29 |
| PROC5 | ECETOC TRA | | Inhalation, systemic, long-term | 0,39 mg/m ³ | 0,26 |
| PROC5 | ECETOC TRA | | Dermal, systemic, long-term | 0,03 mg/kg bw/day | 0,07 |
| PROC8a | ECETOC TRA | Material transfers, with sample collection | Dermal, local, acute | 4 µg/cm ² | 0,29 |
| PROC8a | ECETOC TRA | Material transfers, with sample collection | Inhalation, systemic, long-term | 0,16 mg/m ³ | 0,10 |
| PROC8a | ECETOC TRA | Material transfers, with sample collection | Dermal, systemic, long-term | 0,05 mg/kg bw/day | 0,14 |
| PROC8a | ECETOC TRA | Drum/batch transfers | Dermal, local, acute | 5 µg/cm ² | 0,39 |
| PROC8a | ECETOC TRA | Drum/batch transfers | Inhalation, systemic, long-term | 0,43 mg/m ³ | 0,29 |
| PROC8a | ECETOC TRA | Drum/batch transfers | Dermal, systemic, long-term | 0,08 mg/kg bw/day | 0,19 |
| PROC8a | ECETOC TRA | Equipment cleaning and maintenance | Dermal, local, acute | 12 µg/cm ² | 0,86 |
| PROC8a | ECETOC TRA | Equipment cleaning and maintenance | Inhalation, systemic, long-term | 0,47 mg/m ³ | 0,31 |
| PROC8a | ECETOC TRA | Equipment cleaning and maintenance | Dermal, systemic, long-term | 0,16 mg/kg bw/day | 0,41 |
| PROC8b | ECETOC TRA | Material transfers, with sample collection | Dermal, local, acute | 4 µg/cm ² | 0,29 |
| PROC8b | ECETOC TRA | Material transfers, | Inhalation, systemic, | 0,24 mg/m ³ | 0,16 |

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| | | | | | |
|--------|------------|---|--|------------------------|------|
| PROC8b | ECETOC TRA | with sample collection Material transfers, with sample collection | long-term Dermal, systemic, long-term | 0,03 mg/kg bw/day | 0,07 |
| PROC8b | ECETOC TRA | Drum and small package filling, Drum/batch transfers | Dermal, local, acute | 6 µg/cm ² | 0,39 |
| PROC8b | ECETOC TRA | Drum and small package filling, Drum/batch transfers | Inhalation, systemic, long-term | 0,22 mg/m ³ | 0,14 |
| PROC8b | ECETOC TRA | Drum and small package filling, Drum/batch transfers | Dermal, systemic, long-term | 0,04 mg/kg bw/day | 0,09 |

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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