|--|

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

| 1.1 Product identifier | |
|--|---|
| Trade name | : Melamine |
| REACH Registration Number | : 01-2119485947-16-0001, 01-2119485947-16-0002, 01- 2119485947-16-XXXX |
| Substance name | : 1,3,5-Triazine-2,4,6-Triamine |
| CAS-No. | : 108-78-1 |
| 1.2 Relevant identified uses of th Use of the Substance/Mixture | ne substance or mixture and uses advised against : Manufacture of resins, Fire retardant |
| Recommended restrictions on use | : Food/ feedstuff additives |
| 1.3 Details of the supplier of the | safety data sheet |
| Manufacturer, importer, supplier | : LAT Nitrogen Linz GmbH StPeter Strasse 25, A-4021 Linz, Austria Telephone: +43 732 6914-0 LAT Nitrogen Piesteritz GmbH |
| | Möllensdorfer Strasse 13, D-06886 Lutherstadt Wittenberg, Germany Telephone: +49 3491 68 2200 |
| E-mail address | : <u>sds@lat-nitrogen.com</u> |
| 1.4 Emorgonov tolonhono numb | |

1.4 Emergency telephone number

+44 (0) 1235 239 670 (NCEC Carechem 24) 0870 600 6266 National Poisons Information Service, UK (24h)



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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

| Reproductive toxicity, Category 2 | H361f: Suspected of damaging fertility. |
|---|--|
| Carcinogenicity, Category 2 | H351: Suspected of causing cancer. |
| Specific target organ toxicity - repeated exposure, Category 2, Urinary tract | H373: May cause damage to organs through prolonged or repeated exposure. |

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

| Hazard pictograms | : | |
|--------------------------|---|---|
| Signal word | : | Warning |
| Hazard statements | : | H351 Suspected of causing cancer. H361f Suspected of damaging fertility. H373 May cause damage to organs (Urinary tract) through prolonged or repeated exposure. |
| Precautionary statements | : | Prevention: P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. |
| | | Response: P308 + P313 IF exposed or concerned: Get medical advice/ attention. |



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Storage:

P405 Store locked up.

2.3 Other hazards

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.

SECTION 3: Composition/information on ingredients

3.1 Substances

| Substance name | : | 1,3,5-Triazine-2,4,6-Triamine |
|----------------|---|-------------------------------|
| CAS-No. | : | 108-78-1 |

Components

| Chemical name | CAS-No. EC-No. | Concentration (% w/w) |
|-------------------------------|-----------------------|-----------------------|
| 2,4,6-triamino-1,3,5-triazine | 108-78-1 203-615-4 | >= 99,8 |

SECTION 4: First aid measures

4.1 Description of first aid measures

| General advice | : When symptoms persist or in all cases of doubt seek medical advice. |
|-------------------------|---|
| If inhaled | : Remove to fresh air immediately. Get medical attention immediately. |
| In case of skin contact | : Remove/ Take off immediately all contaminated clothing. Wash off with soap and plenty of water. |
| In case of eye contact | : Rinse thoroughly with plenty of water, also under the eyelids. If easy to do, remove contact lens, if worn. |
| If swallowed | : If swallowed, DO NOT induce vomiting. |



| Weidmine | | |
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| | Rinse mouth with water. Seek medical advice. | |
| 4.2 Most important symptoms | and effects, both acute and delayed | 1 |
| Symptoms | : Inhalation of dust may provoke to Respiratory irritation Cough | the following symptoms: |
| | May irritate eyes. | |
| | Ingestion may affect the followin Kidney Bladder | ng organ(s): |
| Risks | Suspected of causing cancer. Suspected of damaging fertility. May cause damage to organs the exposure. | |
| 4.3 Indication of any immediate | e medical attention and special treat | tment needed |
| Treatment | : Treat symptomatically. There is no specific antidote ava | ailable. |
| SECTION 5: Firefighting me | asures | |
| 5.1 Extinguishing media | | |
| Suitable extinguishing media | a : Water spray Dry powder Alcohol-resistant foam | |

5.2 Special hazards arising from the substance or mixture

| Specific hazards during firefighting | Hazardous decomposition products formed under fire conditions. Hydrogen cyanide (hydrocyanic acid) Ammonia Nitrogen oxides (NOx) |
|--------------------------------------|---|
| | Nitrogen oxides (NOx) |

Carbon dioxide (CO2)

5.3 Advice for firefighters

| Special protective equipment | : | Wear self-contained broken | reathing ap | pparatus and | protective | suit. |
|------------------------------|---|----------------------------|-------------|--------------|------------|-------|
|------------------------------|---|----------------------------|-------------|--------------|------------|-------|



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|---------------------|--|---|
| for firefighters | | |
| Further information | Standard procedure for chemical fires. In the event of fire, cool tanks with water spray. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. | |

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing dust. Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust). Use personal protective equipment. In case of strong dust development: Dust impervious protective suit

6.2 Environmental precautions

Prevent product from entering environment and drains.

6.3 Methods and material for containment and cleaning up

Contain spillage, pick up with a vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations. Avoid dust formation. Dispose of in accordance with local regulations.

6.4 Reference to other sections

For personal protection see section 8. For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

: Do not breathe dust. Ensure adequate ventilation.





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| | In case of dust development use Hazardous decomposition produ temperatures. | | |
| Advice on protection against fire and explosion | : Product resists ignition and does | s not promote flame spread. | |
| Hygiene measures | before entering eating areas. Wa drinking, or smoking. Handle in a | : Remove contaminated clothing and protective equipment before entering eating areas. Wash hands before eating, drinking, or smoking. Handle in accordance with good industrial hygiene and safety practice. | |
| 7.2 Conditions for safe storage, | including any incompatibilities | | |
| Requirements for storage areas and containers | | in a place accessible by | |
| Advice on common storage | : Keep away from food, drink and | animal feedingstuffs. | |
| Further information on storage stability | : Stable under normal conditions. | | |
| 7.3 Specific end use(s) | | | |
| Specific use(s) | : Not applicable | | |

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL):

| Substance name | End Use | Exposure routes | Potential health effects | Value |
|-----------------------------------|---------|-----------------|-------------------------------|--------------------|
| 2,4,6-triamino-1,3,5- triazine | Workers | Inhalation | Acute systemic effects | 82,3 mg/m3 |
| | Workers | Inhalation | Long-term systemic effects | 8,3 mg/m3 |
| | Workers | Skin contact | Acute systemic effects | 117 mg/kg bw/d |
| | Workers | Skin contact | Long-term systemic effects | 11,8 mg/kg bw/d |



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| Consumers | Skin contact | Long-term systemic effects | 4,2 mg/kg bw/d |
|-----------|--------------|-------------------------------|--------------------|
| Consumers | Inhalation | Long-term systemic effects | 1,5 mg/m3 |
| Consumers | Ingestion | Long-term systemic effects | 0,42 mg/kg bw/d |

Predicted No Effect Concentration (PNEC):

| Substance name | Environmental Compartment | Value |
|-------------------------------|---------------------------|----------------------------------|
| 2,4,6-triamino-1,3,5-triazine | Fresh water | 0,51 mg/l |
| | Marine water | 0,051 mg/l |
| | Intermittent use/release | 2 mg/l |
| | Fresh water sediment | 13,06 mg/kg dry weight (d.w.) |
| | Marine sediment | 1,306 mg/kg dry weight (d.w.) |
| | Sewage treatment plant | 100 mg/l |
| | Soil | 2,312 mg/kg dry |
| | | weight (d.w.) |

8.2 Exposure controls

Engineering measures

Avoid dust formation. Provide adequate ventilation.

Personal protective equipment

| Eye protection | : Safety glasses (EN 166) |
|---|--|
| Hand protection Material Break through time Glove thickness Directive | Nitrile rubber >= 480 min >= 0,11 mm Equipment should conform to EN 374 |
| Remarks | : For prolonged or repeated contact use protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. |
| Skin and body protection | : Wear suitable protective clothing. |



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|---|--|---|
| | In case of strong dust developm Dust impervious protective suit | |
| Respiratory protection | : Wear respiratory protection who certain contributing scenario. | en its use is identified for |
| Protective measures | Handle in accordance with good practice. Do not eat, drink or smoke whe Do not breathe dust. Wash contaminated clothing be | en using this product. |
| Environmental exposure General advice | controls : Prevent product from entering e | environment and drains. |

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| Appearance | : | crystalline, powder |
|---|---|-------------------------------------|
| Colour | : | white |
| Odour | : | odourless |
| рН | : | 8,0 - 9,5 10% aqueous solution |
| Melting point | : | 361 °C |
| Boiling point | : | Decomposes below the boiling point. |
| Flash point | : | Not applicable |
| Flammability (solid, gas) | : | The product is not flammable. |
| Upper explosion limit / Upper flammability limit | : | Not applicable (solid) |
| Lower explosion limit / Lower flammability limit | : | Not applicable (solid) |



SAFETY DATA SHEET According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

Melamine

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|--|--|---|
| Vapour pressure | Not applicable (solid) | |
| Relative vapour density | Not applicable (solid) | |
| Density | 1,574 g/cm³ | |
| Bulk density | 650 - 800 kg/m³ | |
| Solubility(ies) Water solubility | 3,2 g/l slightly soluble (2 | 20 °C) |
| Solubility in other solvents | 0,3 g/l (30 °C) Solvent: Acetone | |
| | 0,6 g/l (30 °C) Solvent: Ethanol | |
| Partition coefficient: n- octanol/water | log Pow: -1,22 | |
| Auto-ignition temperature | Product resists ignition a | and does not promote flame spread. |
| Decomposition temperature | > 280 °C | |
| Viscosity Viscosity, kinematic | Not applicable (solid) | |
| Explosive properties | Not explosive | |
| Oxidizing properties | The substance or mixtu | re is not classified as oxidizing. |
| 9.2 Other information Molecular weight | 126,12 g/mol | |
| Minimum ignition energy | > 1,4 kJ Method: VDI 2263-1 not dust explosive | |



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| Particle size | : < 90 μm > 85 % | |
| SECTION 10: Stability and r | eactivity | |
| 10.1 Reactivity Stable at normal ambient ter 10.2 Chemical stability Stable under normal condition | | |
| 10.3 Possibility of hazardous r | | |
| Hazardous reactions | | n under conditions of normal use. Is gases. |
| 10.4 Conditions to avoid Conditions to avoid | : None known. | |
| 10.5 Incompatible materials Materials to avoid | : Strong acids and oxidizing ag | ents |
| 10.6 Hazardous decomposition Under fire conditions: Ammonia Nitrogen oxides (NOx) Hydrogen cyanide (hydrocya | | |
| SECTION 11: Toxicological | information | |
| 11.1 Information on toxicologic | cal effects | |
| Acute toxicity Based on available data, the | e classification criteria are not met. | |
| Product: Acute oral toxicity | : LD50 (Rat, male): 3161 mg/kg | bw |

| Acute inhalation toxicity | : | LC50 (Rat, male and female): > 5190 |
|---------------------------|---|-------------------------------------|



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|--|---|---|
| | Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline | 403 |
| Acute dermal toxicity | : LD50 Dermal (Rabbit): > 1000 | mg/kg bw |
| Skin corrosion/irritation | | |
| Based on available data, t | the classification criteria are not met. | |
| Product: | | |
| Species Exposure time Method Result | : Rabbit : 72 h : OECD Test Guideline 404 : No skin irritation | |
| Serious eye damage/eye | | |
| | the classification criteria are not met. | |
| Product: | | |
| Species Exposure time Result | : Rabbit : 72 h : No eye irritation | |
| Respiratory or skin sens | sitisation | |
| Skin sensitisation | | |
| Based on available data, t | the classification criteria are not met. | |
| Respiratory sensitisation | 1 | |
| Based on available data, t | the classification criteria are not met. | |
| Product: | | |
| Test Type | : Maximisation Test | |
| Species | : Guinea pig | |
| Method | : OECD Test Guideline 406 | |
| Result | : Not a skin sensitizer. | |
| Germ cell mutagenicity | | |
| | the classification criteria are not met. | |
| | | |
| Product: | | |



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|---|---|---|
| | Test system: Chinese hamster ova Result: negative | ry cells |
| Genotoxicity in vivo | : Test Type: Chromosome aberration Species: Mouse (male) Strain: B6C3F1 Result: negative | n test in vitro |
| Carcinogenicity | | |
| Suspected of causing cancer. | | |
| Product: | | |
| Species Application Route LOAEL Target Organs Remarks | Rat, male Oral 126 mg/kg bw/day Urinary bladder In animal studies carcinomas were the bladder of male rats, caused by stones and their constant irritation, | y the formation of bladder |
| Reproductive toxicity Suspected of damaging fertility | ۷. | |
| Product: | | |
| Effects on foetal development | : Species: Rat Teratogenicity: NOAEL: 400 mg/kg Method: OECD Test Guideline 414 Result: No teratogenic effects | |
| | Species: Rabbit Developmental Toxicity: NOAEL: 1 Method: OECD Test Guideline 414 Result: No adverse effects | |
| STOT - single exposure Based on available data, the c | lassification criteria are not met. | |
| STOT - repeated exposure | | |
| May cause damage to organs | (Urinary tract) through prolonged or rep | peated exposure. |
| Repeated dose toxicity | | |

Product:



| weiainne | | |
|--|--|---|
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| Species NOAEL Application Route Target Organs Assessment | Rat, male and female 72 mg/kg bw/day Oral Bladder, Kidney May cause damage to organs thr exposure. | rough prolonged or repeated |
| Aspiration toxicity | | |
| • | classification criteria are not met. | |
| <u>Product:</u> Not applicable | | |
| Components: | | |
| 2,4,6-triamino-1,3,5-triazine: | | |
| Not applicable | | |
| SECTION 12: Ecological infor | mation | |
| 12.1 Toxicity | | |
| Product: | | |
| Toxicity to fish | : LC50 (Rainbow trout): > 3.000 m Exposure time: 96 h | ıg/l |
| Toxicity to daphnia and other aquatic invertebrates | : EC50 (Daphnia magna (Water fle Exposure time: 48 h Test Type: static test | ea)): 200 mg/l |

Toxicity to algae/aquatic
plants: NOEC (Selenastrum capricornutum (green algae)): 98 mg/l
End point: Growth inhibition
Exposure time: 96 h
Remarks: Fresh waterToxicity to fish (Chronic
toxicity): NOEC: 5,1 mg/l
Exposure time: 36 d
Remarks: Fresh water

Remarks: Fresh water

Toxicity to daphnia and other : NOEC: 11 mg/l



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|--|--|---|
| aquatic invertebrates (Chronic toxicity) | Exposure time: 21 d Species: Daphnia (water flea) Test Type: semi-static test Method: OECD Test Guideline 211 Remarks: Fresh water | |
| 12.2 Persistence and degradabil | ity | |
| Product: | | |
| Biodegradability | : Remarks: Not readily biodegradable Not inherently biodegradable. | 2. |
| 12.3 Bioaccumulative potential | | |
| Product: | | |
| Bioaccumulation | : Species: Fish Bioconcentration factor (BCF): 3,8 Remarks: Bioaccumulation not exp | pected. |
| 12.4 Mobility in soil | | |
| Product: | | |
| Distribution among environmental compartments | : Medium: Soil log Koc: 2,3 Method: OECD Test Guideline 106 | i |
| | Medium: Water Remarks: 94% | |
| | Medium: Air Remarks: 6% | |
| 12.5 Results of PBT and vPvB as | ssessment | |
| Product: | | |
| Assessment | : This substance/mixture contains no to be either persistent, bioaccumula | ative and toxic (PBT), or |

LAT Nitrogen Austria GmbH | St. Peter-Strasse 25 | 4021 Linz | Austria Telephone +43 732 6915 0 FN 257746p | Regional Court of Linz | Website <u>www.lat-nitrogen.com</u>



0.1% or higher..

very persistent and very bioaccumulative (vPvB) at levels of

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|-----------------------------------|---|---|
| 12.6 Other adverse effects | | |
| Product: | | |
| Endocrine disrupting potential | : The substance/mixture does no considered to have endocrine to REACH Article 57(f) or Com (EU) 2017/2100 or Commission levels of 0.1% or higher. | disrupting properties according |
| Additional ecological information | : Do not allow product to reach or sewage system. Spillage of even small amounts drinking water. | |

SECTION 13: Disposal considerations

13.1 Waste treatment methods

| Product | Do not dispose of together with household waste. Do not allow product to reach ground water, water bodies or sewage system. Contact the proper local authorities. |
|------------------------|---|
| | European waste code: 16 05 08* (discarded organic chemicals consisting of or containing dangerous substances) |
| Contaminated packaging | : Empty remaining contents. Dispose of in accordance with local regulations. |

SECTION 14: Transport information

14.1 UN number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good



| Melamine | | |
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| 14.4 Packing group Not regulated as a dar | ngerous good | |
| 14.5 Environmental hazar Not regulated as a dar | | |
| 14.6 Special precautions | for user | |
| Remarks | : Not dangerous goods in the m IMDG-Code, ICAO/IATA-DGR | eaning of ADR/RID, ADN, |

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

| REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) | : | Not applicable |
|--|---|-------------------------------|
| REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) | : | Not applicable |
| REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). | : | 2,4,6-triamino-1,3,5-triazine |
| UK REACH List of substances subject to authorisation (Annex XIV) | : | Not applicable |

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. Not applicable

15.2 Chemical safety assessment

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



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SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways: ADR - Agreement concerning the International Carriage of Dangerous Goods by Road: AllC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC -International Agency for Research on Cancer; IATA - International Air Transport Association; IBC -International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk: IC50 - Half maximal inhibitory concentration: ICAO - International Civil Aviation Organization: IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Cooperation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT -Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

| Training advice | : | Provide adequate information, instruction and training for operators. |
|-------------------|---|---|
| Other information | : | Issued according to Regulation (EC) No 1907/2006, Annex II, |



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|---|--|---|
| Sources of key data used to compile the Safety Data Sheet | and its amendments.Chemical Safety Report, Melamine. Consortium, 2023 | Melamine REACH |

Disclaimer

To the best of our knowledge, the information contained herein is accurate and reliable as of the date of publication. However we do not assume any warranty and liability whatsoever for the accuracy and completeness of such information.

We herewith also do not make any representation or warranty of merchantability of our products or their fitness for a particular purpose.

It is the customer's responsibility to inspect and test our products in order to satisfy itself as to the suitability of the products for the customer's particular purpose. The customer is responsible for the appropriate, safe and legal use, processing and handling of our products.

The information contained herein relates exclusively to our products when not used in conjunction with any third party materials. No liability can be accepted especially in respect of the use of our products in conjunction with other material or substance.



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Annex: Exposure Scenarios

Table of Contents

| Number | Title |
|--------|--|
| ES1 | Formulation or re-packing, Formulation & (re)packing of substances and mixtures; Adhesives, sealants (PC1); Coatings and paints, thinners, paint removers (PC9a); Laboratory chemicals (PC21); Leather treatment products (PC23); Polymer preparations and compounds (PC32); Washing and cleaning products (PC35) |
| ES2 | Use at industrial sites, Use as monomer (intermediate) for melamine based resins production; Adhesives, sealants (PC1); Coatings and paints, thinners, paint removers (PC9a); Fillers, putties, plasters, modelling clay (PC9b); Finger paints (PC9c); Ink and toners (PC18); Laboratory chemicals (PC21); Leather treatment products (PC23); Polymer preparations and compounds (PC32); Washing and cleaning products (PC35); Cosmetics, personal care products (PC39); Agriculture, forestry, fishery (SU1); Mining, (without offshore industries) (SU2a); Manufacture of textiles, leather, fur (SU5); Manufacture of wood and wood products (SU6a); Manufacture of pulp, paper and paper products (SU6b); Manufacture of bulk, large scale chemicals (including petroleum products) (SU8); Manufacture of fine chemicals (SU9); Manufacture of rubber products (SU11); Manufacture of plastics products, including compounding and conversion (SU12); Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU13); Manufacture of furniture (SU18); Building and construction work (SU19) |
| ES3 | Use at industrial sites, Use as monomer (intermediate) in melamine based resins before curing; Polymer preparations and compounds (PC32) |
| ES4 | Use at industrial sites, Use as intermediate for the production of other substances; Polymer preparations and compounds (PC32); Cosmetics, personal care products (PC39); Manufacture of bulk, large scale chemicals (including petroleum products) (SU8) |
| ES5 | Use at industrial sites, Use as additive in foams; Laboratory chemicals (PC21); Polymer preparations and compounds (PC32); Manufacture of rubber products (SU11); Manufacture of plastics products, including compounding and conversion (SU12); Manufacture of furniture (SU18) |
| ES6 | Use at industrial sites, Use as additive in intumescent coatings; Coatings and paints, thinners, paint removers (PC9a); Polymer preparations and compounds (PC32); Manufacture of plastics products, including compounding and conversion (SU12); General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment (SU17); Building and construction work (SU19) |
| ES7 | Widespread use by professional workers, Use as additive in intumescent coatings; Coatings |



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|-------------|--|---|
| | and paints, thinners, paint removers (PC9a); Laboratory c preparations and compounds (PC32); Manufacture of plas compounding and conversion (SU12); Building and const | stics products, including |
| ES8 | Service life - workers, PU foams - Workers (industrial); ; V Vehicles (ELV) directive (AC1a); ; Plastic articles (AC13); | - |
| ES9 | Service life - workers, Intumescent coatings - Workers (ind apparel: Large surface area articles (AC5a); ; Metal article (AC7a); ; Plastic articles (AC13) | |
| ES10 | Service life - workers, Intumescent coatings - Professional apparel: Large surface area articles (AC5a); ; Metal article (AC7a); ; Plastic articles (AC13) | |
| ES11 | Service life - consumers, PU foams - Consumers; ; Plastic | c articles (AC13) |
| ES12 | Service life - consumers, Intumescent coatings - Consume | ers; ; Plastic articles (AC13) |



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ES1: Formulation & (re)packing of substances and mixtures

1.1. Title section

| Structured Short Title : | Formulation or re-packing, Formulation & (re)packing of substances and mixtures; Adhesives, sealants (PC1).; Coatings and paints, thinners, paint removers (PC9a).; Laboratory chemicals (PC21).; Leather treatment products (PC23).; Polymer preparations and compounds (PC32).; Washing and cleaning products (PC35). |
|--------------------------|--|
|--------------------------|--|

| Environm | Environment | | | |
|----------|--|--------|--|--|
| CS1 | Formulation & (re)packing of substances and mixtures | ERC2 | | |
| Worker | | | | |
| CS2 | Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions | PROC2 | | |
| CS3 | Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition | PROC3 | | |
| CS4 | Chemical production where opportunity for exposure arises | PROC4 | | |
| CS5 | Mixing or blending in batch processes (solid) | PROC5 | | |
| CS6 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) | PROC8a | | |
| CS7 | Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) | PROC8b | | |
| CS8 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) | PROC9 | | |
| CS9 | Tabletting, compression, extrusion, pelettisation, granulation | PROC14 | | |
| CS10 | Use as laboratory reagent (solid) | PROC15 | | |
| CS11 | Manual activities involving hand contact (solid) | PROC19 | | |
| CS12 | Manual maintenance (cleaning and repair) of machinery (solid) | PROC28 | | |



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|-------------|--|---|
| CS13 | Mixing or blending in batch processes (liquid) | PROC5 |

| 0010 | mixing of biending in batch processes (inquity) | 11000 | | |
|------|--|--------|--|--|
| CS14 | S14 Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) | | | |
| CS15 | Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) | PROC8b | | |
| CS16 | Use as laboratory reagent (liquid) | PROC15 | | |
| CS17 | Manual activities involving hand contact (liquid) | PROC19 | | |
| CS18 | Manual maintenance (cleaning and repair) of machinery (liquid) | PROC28 | | |

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation into mixture (ERC2)

| Conditions and measures related to sewage treatment plant | | |
|---|--|--|
| STP type | : Municipal Sewage Treatment Plant | |
| Additional information on STP | : Biological elimination | |
| STP sludge treatment | : Controlled application of sewage sludge to agricultural soil | |
| STP effluent | : 2.000 m³/d | |
| Other conditions affecting environmental exposure | | |
| Receiving surface water flow | : 18.000 m³/d | |
| Local freshwater dilution factor | : 10 | |

1.2.2. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

| Product (article) characteristics | | |
|---|---------------------------|--|
| Covers percentage substance in the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | |





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| Amount used, frequency and duration of use (or from service life) | | | |
|---|--|--|--|
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting w | orkers exposure | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 40 °C | | |
| Additional good practice ad | vice. Obligations according to Article 37(4) of REACH do not apply | | |

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.3. Control of worker exposure:Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

| Product (article) characterist | ics |
|---------------------------------|---|
| Covers percentage substance | in the product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and | duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Other conditions affecting w | orkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice adv | ice. Obligations according to Article 37(4) of REACH do not apply |
| Assumes that activities are und | ertaken with appropriate and well maintained equipment by trained |

personnel operating under supervision.



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Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

1.2.4. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product

: Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

Covers daily exposures up to 8 hours :

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.5. Control of worker exposure: Mixing or blending in batch processes (solid) (PROC5)



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Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

:

Duration

Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) (PROC8a)

| Product (article) characteristics |
|---|
| Covers percentage substance in the product up to 100 %. |
| Physical form of product : Solid, medium dustiness |
| Amount used, frequency and duration of use (or from service life) |





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Duration

Covers daily exposures up to 8 hours

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

:

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) (PROC8b)

| | Product (article) characteristics | |
|--|-----------------------------------|--|
|--|-----------------------------------|--|

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

·

Duration

Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.



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Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.8. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Product (article) characteristics |
|-----------------------------------|
| Product (article) characteristics |

Covers percentage substance in the product up to 100 %.

Physical form of product

Solid, medium dustiness :

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 80 %

| Other conditions affecting workers exposure | | |
|---|--------------|--|
| Indoor or outdoor use | : Indoor use | |
| Temperature | : 40 °C | |



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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.9. Control of worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

| Product (article) | characteristics |
|-------------------|-----------------|
|-------------------|-----------------|

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

 Indoor or outdoor use
 : Indoor use

 Temperature
 : 40 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.





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1.2.10. Control of worker exposure:Use as laboratory reagent (solid) (PROC15)

| Product (article) characteristics | | | |
|---|---|--|--|
| Covers percentage substance | Covers percentage substance in the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | | |
| Amount used, frequency and duration of use (or from service life) | | | |
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 40 °C | | |

1.2.11. Control of worker exposure: Manual activities involving hand contact (solid) (PROC19)

| Product (article) characteristics | | |
|--|--|--|
| Covers percentage substance in the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | |
| Amount used, frequency and duration of use (or from service life) | | |
| Duration | : Covers exposure up to 4 hrs | |
| Conditions and measures related to personal protection, hygiene and health evaluation | | |
| Conditions and measures | related to personal protection, hygiene and health evaluation | |
| Wear chemically resistant glo If skin contamination is expect be protected with impervious For further specification, refer | ves (tested to EN374) in combination with specific activity training. ted to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. to section 8 of the SDS. | |
| Wear chemically resistant glo If skin contamination is expec be protected with impervious | ves (tested to EN374) in combination with specific activity training. ted to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. to section 8 of the SDS. of 95 % | |



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Temperature

: 40 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.12. Control of worker exposure:Manual maintenance (cleaning and repair) of machinery (solid) (PROC28)

| Product (article) characteristics | |
|-----------------------------------|--|

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, high dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately.



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Ensure daily cleaning of the equipment.

1.2.13. Control of worker exposure: Mixing or blending in batch processes (liquid) (PROC5)

| Product (article) characteristic | S S | |
|--|--|--|
| Covers concentrations up to 30 | % | |
| Physical form of product | : Liquid | |
| Amount used, frequency and | duration of use (or from service life) | |
| Duration | : Covers daily exposures up to 8 hours | |
| | ated to personal protection, hygiene and health evaluation | |
| Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 80 % | | |
| Other conditions affecting wo | rkers exposure | |
| Indoor or outdoor use | : Indoor use | |
| Temperature | : 115 °C | |
| Additional good practice advi | ce. Obligations according to Article 37(4) of REACH do not apply | |
| personnel operating under supe | ning and maintenance of equipment and machines. | |

1.2.14. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) (PROC8a)

Product (article) characteristics

Covers concentrations up to 30 %



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Physical form of product : Liquid

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

: Indoor use

: 115 °C

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor | or outdoor use | |
|--------|----------------|--|

Temperature

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.15. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) (PROC8b)

| Product (article) characteristics | | |
|---|--|--|
| Covers concentrations up to 30 % | | |
| Physical form of product | : Liquid | |
| Amount used, frequency and duration of use (or from service life) | | |
| Duration | : Covers daily exposures up to 8 hours | |
| Conditions and measures related to personal protection, hygiene and health evaluation | | |





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Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

| Other conditions affecting workers exposure | | |
|---|--------------|--|
| Indoor or outdoor use | : Indoor use | |
| Temperature | : 115 °C | |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

1.2.16. Control of worker exposure:Use as laboratory reagent (liquid) (PROC15)

| Product (article) characteristics | | | |
|---|--|--|--|
| Covers concentrations up to 30 % | | | |
| Physical form of product | : Liquid | | |
| Amount used, frequency and duration of use (or from service life) | | | |
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 115 °C | | |

1.2.17. Control of worker exposure: Manual activities involving hand contact (liquid) (PROC19)

Product (article) characteristics



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Covers concentrations up to 30 %

Physical form of product : Liquid

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 95 %

Other conditions affecting workers exposure

Indoor or outdoor use: Indoor useTemperature: 115 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.2.18. Control of worker exposure:Manual maintenance (cleaning and repair) of machinery (liquid) (PROC28)

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours



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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 115 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation into mixture (ERC2)

| Release route | Release rate | Release estimation method |
|---------------|--------------|---------------------------|
| Water | 5 kg/day | Estimated release factor |
| Air | 1 kg/day | Estimated release factor |
| Soil | 0 kg/day | Estimated release factor |

| Compartment | Exposure level | RCR |
|---------------------|--------------------------------|-------|
| Freshwater | 0,244 mg/L (EUSES) | 0,478 |
| Freshwater sediment | 6,242 mg/kg dry weight (EUSES) | 0,478 |
| Marine water | 0,024 mg/L (EUSES) | 0,478 |
| Marine sediment | 0,624 mg/kg dry weight (EUSES) | 0,478 |



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| Sewage treatment plant | 2,433 mg/L (EUSES) | 0,024 |
|----------------------------------|------------------------------------|--------|
| Agricultural soil | 1,727 mg/kg dry weight (EUSES) | 0,747 |
| Man via environment - Inhalation | 0,000228 mg/m ³ (EUSES) | < 0,01 |
| Man via environment - Oral | 0,023 mg/kg bw/day (EUSES) | 0,054 |
| combined routes | | 0,054 |

1.3.2. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,5 mg/m³ (ECETOC TRA worker v3) | 0,06 | |
| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
| dermal | systemic | long-term | 1,37 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,176 | |

1.3.3. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 0,69 mg/kg bw/day (ECETOC TRA worker v3) | 0,058 | |
| combined routes | systemic | long-term | | 0,179 | |



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1.3.4. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,719 | |

1.3.5. Worker exposure: Mixing or blending in batch processes (solid) (PROC5)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

1.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) (PROC8a)

| Exposure route | | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|----------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |



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| dermal | systemic | | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
|-----------------|----------|-----------|---|-------|--|
| combined routes | systemic | long-term | | 0,835 | |

1.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|---|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,353 | |

1.3.8. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,719 | |

1.3.9. Worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

| Exposure route Health effect Exposure indicator | Exposure level | RCR | Remarks |
|---|----------------|-----|---------|
|---|----------------|-----|---------|

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| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
|-----------------|----------|------------|--|-------|--|
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 3,43 mg/kg bw/day (ECETOC TRA worker v3) | 0,291 | |
| combined routes | systemic | long-term | | 0,411 | |

1.3.10. Worker exposure: Use as laboratory reagent (solid) (PROC15)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,5 mg/m³ (ECETOC TRA worker v3) | 0,06 | |
| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
| dermal | systemic | long-term | 0,34 mg/kg bw/day (ECETOC TRA worker v3) | 0,029 | |
| combined routes | systemic | long-term | | 0,089 | |

1.3.11. Worker exposure: Manual activities involving hand contact (solid) (PROC19)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 3 mg/m ³ (ECETOC TRA worker v3) | 0,361 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 7,072 mg/kg bw/day (ECETOC TRA worker v3) | 0,599 | |
| combined routes | systemic | long-term | | 0,961 | |



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1.3.12. Worker exposure: Manual maintenance (cleaning and repair) of machinery (solid) (PROC28)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

1.3.13. Worker exposure: Mixing or blending in batch processes (liquid) (PROC5)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | > 0,01 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

1.3.14. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m ³ | > 0,01 | |



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| | | | (ECETOC TRA worker v3) | | |
|-----------------|----------|-----------|---|-------|--|
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

1.3.15. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m³ (ECETOC TRA worker v3) | > 0,01 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

1.3.16. Worker exposure: Use as laboratory reagent (liquid) (PROC15)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m³ (ECETOC TRA worker v3) | > 0,01 | |
| dermal | systemic | long-term | 0,34 mg/kg bw/day (ECETOC TRA worker v3) | 0,029 | |
| combined routes | systemic | long-term | | 0,092 | |



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1.3.17. Worker exposure: Manual activities involving hand contact (liquid) (PROC19)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 1,74 mg/m ³ (Stoffenmanager v4.0) | 0,21 | |
| inhalative | systemic | short-term | 1,74 mg/m ³ (Stoffenmanager v4.0) | 0,021 | |
| dermal | systemic | long-term | 7,072 mg/kg bw/day (ECETOC TRA worker v3) | 0,599 | |
| combined routes | systemic | long-term | | 0,809 | |

1.3.18. Worker exposure: Manual maintenance (cleaning and repair) of machinery (liquid) (PROC28)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | > 0,01 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.



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Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNE co1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf



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ES2: Use as monomer (intermediate) for melamine based resins production

2.1. Title section

| Structured Short Title : | Use at industrial sites, Use as monomer (intermediate) for melamine based resins production; Adhesives, sealants (PC1).; Coatings and paints, thinners, paint removers (PC9a).; Fillers, putties, plasters, modelling clay (PC9b).; Finger paints (PC9c).; Ink and toners (PC18).; Laboratory chemicals (PC21).; Leather treatment products (PC23).; Polymer preparations and compounds (PC32).; Washing and cleaning products (PC35).; Cosmetics, personal care products (PC39).; Agriculture, forestry, fishery (SU1).; Mining, (without offshore industries) (SU2a).; Manufacture of textiles, leather, fur (SU5).; Manufacture of wood and wood products (SU6a).; Manufacture of pulp, paper and paper products (SU6b).; Manufacture of bulk, large scale chemicals (including petroleum products) (SU8).; Manufacture of fine chemicals (SU9).; Manufacture of rubber products (SU11).; Manufacture of plastics products, including compounding and conversion (SU12).; Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU13).; Manufacture of furniture (SU18).; Building and construction work (SU19). |
|--------------------------|--|
|--------------------------|--|

| Environn | nent | |
|----------|--|-----------------|
| CS1 | Use as monomer (intermediate) for melamine based resins production | ERC6a, ERC6c |
| Worker | | |
| CS2 | Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions | PROC1 |
| CS3 | Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions | PROC2 |
| CS4 | Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition | PROC3 |



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| CS5 | Chemical production where opportunity for exposure arises | PROC4 |
|------|--|--------|
| CS6 | Mixing or blending in batch processes | PROC5 |
| CS7 | Calendering operations | PROC6 |
| CS8 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) | PROC8a |
| CS9 | Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) | PROC8b |
| CS10 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (solid) | PROC9 |
| CS11 | Tabletting, compression, extrusion, pelettisation, granulation | PROC14 |
| CS12 | Use as laboratory reagent | PROC15 |
| CS13 | Manual maintenance (cleaning and repair) of machinery | PROC28 |
| CS14 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) | PROC8a |
| CS15 | Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) | PROC8b |
| CS16 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (liquid) | PROC9 |

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Use of intermediate (ERC6a) / Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6c)

| Conditions and measures related to sewage treatment plant | | | | |
|---|--|--|--|--|
| STP type | : Municipal Sewage Treatment Plant | | | |
| Additional information on STP | : Biological elimination | | | |
| STP sludge treatment | : Controlled application of sewage sludge to agricultural soil | | | |
| STP effluent | : 2.000 m³/d | | | |



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| Other conditions affecting enviro | onmental exposure |
|-----------------------------------|----------------------------|
| Receiving surface water flow | : 18.000 m ³ /d |
| Local freshwater dilution factor | : 10 |

2.2.2. Control of worker exposure:Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

| Product (article) characteris | ics |
|-------------------------------|--|
| Covers percentage substance | in the product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and | d duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Other conditions affecting w | orkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice adv | vice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under sup | aning and maintenance of equipment and machines. |

2.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

| Product (article) characteristic | S | |
|----------------------------------|---------------------------|--|
| Covers percentage substance ir | the product up to 100 %. | |
| Physical form of product | : Solid, medium dustiness | |



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| Amount used, frequency and duration of use (or from service life) | | |
|---|--|--|
| Duration | : Covers daily exposures up to 8 hours | |
| Other conditions affecting workers exposure | | |
| Indoor or outdoor use | : Indoor use | |
| Temperature | : 40 °C | |
| Additional good practice adv | vice. Obligations according to Article 37(4) of REACH do not apply | |

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

2.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

| Product (article) characterist | ics |
|---------------------------------|---|
| Covers percentage substance | in the product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and | duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Other conditions affecting w | orkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice adv | ice. Obligations according to Article 37(4) of REACH do not apply |
| Assumes that activities are und | ertaken with appropriate and well maintained equipment by trained |

personnel operating under supervision.



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Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

2.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product

: Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

Covers daily exposures up to 8 hours :

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use Temperature : 40 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

2.2.6. Control of worker exposure: Mixing or blending in batch processes (PROC5)



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Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

:

Duration

Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

2.2.7. Control of worker exposure:Calendering operations (PROC6)

| Product (article) characteristics | | | |
|---|--|--|--|
| Covers percentage substance in the product up to 100 %. | | | |
| Physical form of product | : Solid, medium dustiness | | |
| Amount used, frequency and duration of use (or from service life) | | | |
| Duration | : Covers daily exposures up to 8 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 specific activity training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 90 %

Definal - minimum enciency of 50 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

2.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) (PROC8a)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product

: Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 80 %



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Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately.

Ensure daily cleaning of the equipment.

2.2.9. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) (PROC8b)

| Product (article) characterist | ics |
|---|--|
| Covers percentage substance | in the product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and | I duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Wear suitable gloves tested to f skin contamination is expecte | d to extend to other parts of the body, then these body parts should also arments in a manner equivalent to those described for the hands. to section 8 of the SDS. 80 % |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice adv | rice. Obligations according to Article 37(4) of REACH do not apply |
| | |





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Ensure daily cleaning of the equipment.

2.2.10. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (solid) (PROC9)

| Product (article) characteristic | S |
|----------------------------------|--|
| Covers percentage substance in | the product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and c | luration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures rela | ted to personal protection, hygiene and health evaluation |
| | to extend to other parts of the body, then these body parts should also nents in a manner equivalent to those described for the hands. section 8 of the SDS. |
| Other conditions affecting wor | kers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice advic | e. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under super | ng and maintenance of equipment and machines. |



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2.2.11. Control of worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

| Product (article) characteristics | | | |
|---|---|--|--|
| Covers percentage substance in | the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | | |
| Amount used, frequency and d | uration of use (or from service life) | | |
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 40 °C | | |
| Additional good practice advice | e. Obligations according to Article 37(4) of REACH do not apply | | |
| personnel operating under superv | ng and maintenance of equipment and machines. | | |

2.2.12. Control of worker exposure: Use as laboratory reagent (PROC15)

| Product (article) characteristics | 5 | | |
|---|--|--|--|
| Covers percentage substance in | the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | | |
| Amount used, frequency and d | luration of use (or from service life) | | |
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |



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Temperature

: 40 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

2.2.13. Control of worker exposure:Manual maintenance (cleaning and repair) of machinery (PROC28)

| Product (article) characteristics | |
|-----------------------------------|---------------------------|
| Covers percentage substance in t | he product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately.



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Ensure daily cleaning of the equipment.

2.2.14. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) (PROC8a)

| Product (article) characteris | ics |
|-------------------------------|--|
| Covers concentrations up to 1 | 0 % |
| Physical form of product | : Liquid |
| Amount used, frequency and | d duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Other conditions affecting w | orkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice adv | vice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under sup | aning and maintenance of equipment and machines. |

2.2.15. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) (PROC8b)

Product (article) characteristics

Covers concentrations up to 10 %

Physical form of product

: Liquid

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours



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Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 115 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately.

Ensure daily cleaning of the equipment.

2.2.16. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (liquid) (PROC9)

| Product (article) characteristi | cs |
|---------------------------------|---|
| Covers concentrations up to 10 |) % |
| Physical form of product | : Liquid |
| Amount used, frequency and | duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Other conditions affecting we | orkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice adv | ice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under supe | ning and maintenance of equipment and machines. |

Ensure daily cleaning of the equipment.



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2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Use of intermediate (ERC6a) / Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6c)

| Release route | Release rate | Release estimation method |
|---------------|-----------------------------------|---------------------------|
| Water | 3 kg/day | Estimated release factor |
| Air | 0,5 kg/day | Estimated release factor |
| Soil | 0 kg/day Estimated release factor | |

| Compartment | Exposure level | RCR |
|----------------------------------|------------------------------------|--------|
| Freshwater | 0,147 mg/L (EUSES) | 0,287 |
| Freshwater sediment | 3,751 mg/kg dry weight (EUSES) | 0,287 |
| Marine water | 0,015 mg/L (EUSES) | 0,287 |
| Marine sediment | 0,375 mg/kg dry weight (EUSES) | 0,287 |
| Sewage treatment plant | 1,46 mg/L (EUSES) | 0,015 |
| Agricultural soil | 1,032 mg/kg dry weight (EUSES) | 0,446 |
| Man via environment - Inhalation | 0,000114 mg/m ³ (EUSES) | < 0,01 |
| Man via environment - Oral | 0,013 mg/kg bw/day (EUSES) | 0,031 |
| combined routes | | 0,031 |

2.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|---|--------|---------|
| inhalative | systemic | long-term | 0,01 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| inhalative | systemic | short-term | 0,04 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 0,034 mg/kg | < 0,01 | |



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| | | | bw/day (ECETOC TRA worker v3) | | |
|-----------------|----------|-----------|----------------------------------|--------|--|
| combined routes | systemic | long-term | | < 0,01 | |

2.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,5 mg/m³ (ECETOC TRA worker v3) | 0,06 | |
| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
| dermal | systemic | long-term | 1,37 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,176 | |

2.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 0,69 mg/kg bw/day (ECETOC TRA worker v3) | 0,058 | |
| combined routes | systemic | long-term | | 0,179 | |

2.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

| Exposure route | | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|--|-----------------------|----------------|-----|---------|
|----------------|--|-----------------------|----------------|-----|---------|



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| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
|-----------------|----------|------------|---|-------|--|
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,719 | |

2.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

2.3.7. Worker exposure: Calendering operations (PROC6)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |



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2.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

2.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,353 | |

2.3.10. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (solid) (PROC9)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ | 0,243 | |



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| | | | (ECETOC TRA worker v3) | | |
|-----------------|----------|-----------|---|-------|--|
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,719 | |

2.3.11. Worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|--|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 3,43 mg/kg bw/day (ECETOC TRA worker v3) | 0,291 | |
| combined routes | systemic | long-term | | 0,411 | |

2.3.12. Worker exposure: Use as laboratory reagent (PROC15)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,5 mg/m³ (ECETOC TRA worker v3) | 0,06 | |
| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
| dermal | systemic | long-term | 0,34 mg/kg bw/day (ECETOC TRA worker v3) | 0,029 | |
| combined routes | systemic | long-term | | 0,089 | |

2.3.13. Worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC28)

| Exposure route | Health effect | Exposure | Exposure level | RCR | Remarks |
|----------------|---------------|----------|----------------|-----|---------|
| | | | | | |



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| | | indicator | | | |
|-----------------|----------|------------|---|-------|--|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

2.3.14. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | 0,038 | |
| inhalative | systemic | short-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | > 0,01 | |
| dermal | systemic | long-term | 8,226 mg/kg bw/day (ECETOC TRA worker v3) | 0,697 | |
| combined routes | systemic | long-term | | 0,735 | |

2.3.15. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | 0,038 | |
| inhalative | systemic | short-term | 0,315 mg/m ³ (ECETOC TRA | > 0,01 | |



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| | | | worker v3) | | |
|-----------------|----------|-----------|---|-------|--|
| dermal | systemic | long-term | 8,226 mg/kg bw/day (ECETOC TRA worker √3) | 0,697 | |
| combined routes | systemic | long-term | | 0,735 | |

2.3.16. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (liquid) (PROC9)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | 0,038 | |
| inhalative | systemic | short-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | > 0,01 | |
| dermal | systemic | long-term | 4,114 mg/kg bw/day (ECETOC TRA worker v3) | 0,349 | |
| combined routes | systemic | long-term | | 0,387 | |

2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNEco1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf



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ES3: Use as monomer (intermediate) in melamine based resins before curing

3.1. Title section

| Structured Short Title | : Use at industrial sites, Use as monomer (intermediate) in |
|------------------------|---|
| | melamine based resins before curing; Polymer preparations and compounds (PC32). |
| | |

| Environn | nent | |
|----------|--|--------|
| CS1 | Use as monomer (intermediate) in melamine based resins before curing | ERC6c |
| Worker | | |
| CS2 | Calendering operations | PROC6 |
| CS3 | Industrial spraying | PROC7 |
| CS4 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) | PROC8a |
| CS5 | Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) | PROC8b |
| CS6 | Roller application or brushing | PROC10 |
| CS7 | Manual activities involving hand contact | PROC19 |
| CS8 | Manual maintenance (cleaning and repair) of machinery | PROC28 |
| CS9 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) | PROC8a |
| CS10 | Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) | PROC8b |

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6c)



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| Conditions and measures related to sewage treatment plant | | | | |
|---|--|--|--|--|
| STP type | : Municipal Sewage Treatment Plant | | | |
| Additional information on STP | : Biological elimination | | | |
| STP sludge treatment | : Controlled application of sewage sludge to agricultural soil | | | |
| STP effluent | : 2.000 m³/d | | | |
| Other conditions affecting environmental exposure | | | | |
| Receiving surface water flow | : 18.000 m³/d | | | |
| Local freshwater dilution factor | : 10 | | | |

3.2.2. Control of worker exposure:Calendering operations (PROC6)

| Product (article) characteristic | xs |
|----------------------------------|--|
| Covers concentrations up to 10 | % |
| Physical form of product | : Liquid |
| Amount used, frequency and | duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures rela | ated to personal protection, hygiene and health evaluation |
| | to extend to other parts of the body, then these body parts should also ments in a manner equivalent to those described for the hands. section 8 of the SDS. |
| Other conditions affecting wo | rkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice advis | ce. Obligations according to Article 37(4) of REACH do not apply |



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Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

3.2.3. Control of worker exposure: Industrial spraying (PROC7)

Product (article) characteristics

Covers concentrations up to 10 %

Physical form of product : Liquid

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 115 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

3.2.4. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) (PROC8a)



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Product (article) characteristics

Covers concentrations up to 10 %

Physical form of product : Liquid

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 115 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

3.2.5. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) (PROC8b)

| Product (article) characteristics | |
|------------------------------------|--|
| Covers concentrations up to 10 % | |
| Physical form of product | : Liquid |
| Amount used, frequency and durati | on of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Other conditions affecting workers | exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 120 °C |



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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

3.2.6. Control of worker exposure:Roller application or brushing (PROC10)

| Product (article) characteris | tics |
|-------------------------------|---|
| Covers concentrations up to 1 | 0 % |
| Physical form of product | : Liquid |
| Amount used, frequency an | d duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures re | elated to personal protection, hygiene and health evaluation |
| | ed to extend to other parts of the body, then these body parts should also parments in a manner equivalent to those described for the hands. to section 8 of the SDS. f 80 % |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice ad | vice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under su | aning and maintenance of equipment and machines. |



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3.2.7. Control of worker exposure: Manual activities involving hand contact (PROC19)

| Product (article) characteri | stics |
|---------------------------------|---|
| Covers concentrations up to | 10 % |
| Physical form of product | : Liquid |
| Amount used, frequency a | nd duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures | related to personal protection, hygiene and health evaluation |
| If skin contamination is expect | |
| Other conditions affecting | workers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice a | dvice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under su | eaning and maintenance of equipment and machines. |

3.2.8. Control of worker exposure:Manual maintenance (cleaning and repair) of machinery (PROC28)

| Product (article) characteristics | | |
|-----------------------------------|---|--------|
| Covers concentrations up to 10 % | | |
| Physical form of product | : | Liquid |
| | | |



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| Amount used, frequency and duration of use (or from service life) | | | | |
|---|--|--|--|--|
| Duration | : Covers daily exposures up to 8 hours | | | |
| Other conditions affecting workers exposure | | | | |
| Indoor or outdoor use | : Indoor use | | | |
| Temperature | : 115 °C | | | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | | | |

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

3.2.9. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) (PROC8a)

Product (article) characteristics

Covers concentrations up to 10 %

Physical form of product

: Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use





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Temperature

: 40 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

3.2.10. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) (PROC8b)

| Product (article) characteristic | S | | |
|---|--|--|--|
| Covers concentrations up to 10 | % | | |
| Physical form of product | : Solid, medium dustiness | | |
| Amount used, frequency and duration of use (or from service life) | | | |
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 40 °C | | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | | |
| Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment. | | | |



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3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6c)

| Release route | Release rate | Release estimation method | |
|---------------|--------------|---------------------------|--|
| Water | 0,5 kg/day | Estimated release factor | |
| Air | 0 kg/day | Estimated release factor | |
| Soil | 0 kg/day | Estimated release factor | |

| Compartment | Exposure level | RCR |
|----------------------------------|--------------------------------|--------|
| Freshwater | 0,025 mg/L (EUSES) | 0,049 |
| Freshwater sediment | 0,638 mg/kg dry weight (EUSES) | 0,049 |
| Marine water | 0,0025 mg/L (EUSES) | 0,049 |
| Marine sediment | 0,064 mg/kg dry weight (EUSES) | 0,049 |
| Sewage treatment plant | 0,243 mg/L (EUSES) | < 0,01 |
| Agricultural soil | 0,169 mg/kg dry weight (EUSES) | 0,073 |
| Man via environment - Inhalation | 0 mg/m³ (EUSES) | < 0,01 |
| Man via environment - Oral | 0,0016 mg/kg bw/day (EUSES) | < 0,01 |
| combined routes | | < 0,01 |

3.3.2. Worker exposure: Calendering operations (PROC6)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,315 mg/m³ (ECETOC TRA worker v3) | 0,038 | |
| inhalative | systemic | short-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 3,291 mg/kg bw/day (ECETOC | 0,279 | |



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| | | | TRA worker v3) | | |
|-----------------|----------|-----------|----------------|-------|--|
| combined routes | systemic | long-term | | 0,317 | |

3.3.3. Worker exposure: Industrial spraying (PROC7)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|---|-------|---------|
| inhalative | systemic | long-term | 3,85 mg/m ³ (Stoffenmanager v5.6.10) | 0,464 | |
| inhalative | systemic | short-term | 3,85 mg/m ³ (Stoffenmanager v5.6.10) | 0,047 | |
| dermal | systemic | long-term | 5,143 mg/kg bw/day (ECETOC TRA worker v3) | 0,436 | |
| combined routes | systemic | long-term | | 0,9 | |

3.3.4. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,315 mg/m³ (ECETOC TRA worker v3) | 0,038 | |
| inhalative | systemic | short-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 8,226 mg/kg bw/day (ECETOC TRA worker v3) | 0,697 | |
| combined routes | systemic | long-term | | 0,735 | |

3.3.5. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) (PROC8b)

| Exposure route Health effect Exposure Exposure level RCR Remarks | ; |
|--|---|
|--|---|



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| | | indicator | | | |
|-----------------|----------|------------|---|--------|--|
| inhalative | systemic | long-term | 0,38 mg/m ³ (Stoffenmanager v5.6.10) | 0,046 | |
| inhalative | systemic | short-term | 0,38 mg/m ³ (Stoffenmanager v5.6.10) | < 0,01 | |
| dermal | systemic | long-term | 8,226 mg/kg bw/day (ECETOC TRA worker v3) | 0,697 | |
| combined routes | systemic | long-term | | 0,743 | |

3.3.6. Worker exposure: Roller application or brushing (PROC10)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 1,74 mg/m ³ (Stoffenmanager v5.6.10) | 0,21 | |
| inhalative | systemic | short-term | 1,74 mg/m ³ (Stoffenmanager v5.6.10) | 0,021 | |
| dermal | systemic | long-term | 3,29 mg/kg bw/day (ECETOC TRA worker v3) | 0,279 | |
| combined routes | systemic | long-term | | 0,488 | |

3.3.7. Worker exposure: Manual activities involving hand contact (PROC19)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|--------------------|---|-------|---------|
| inhalative | systemic | long-term | 0,84 mg/m ³ (Stoffenmanager v5.6.10) | 0,101 | |
| inhalative | systemic | short-term | 0,84 mg/m ³ (Stoffenmanager v5.6.10) | 0,01 | |



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|-------------|----------|---------------------------|-------------------------------|-------|--------------------------------------|
| dermal | systemic | long-term | 8,486 mg/kg bw/day (ECETOC | 0,719 | |

| | | | TRA worker v3) | | |
|-----------------|----------|-----------|----------------|------|--|
| combined routes | systemic | long-term | | 0,82 | |

3.3.8. Worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC28)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | 0,038 | |
| inhalative | systemic | short-term | 0,315 mg/m ³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 8,226 mg/kg bw/day (ECETOC TRA worker v3) | 0,697 | |
| combined routes | systemic | long-term | | 0,735 | |

3.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|---|-------|---------|
| inhalative | systemic | long-term | 3 mg/m ³ (ECETOC TRA worker v3) | 0,361 | |
| inhalative | systemic | short-term | 12 mg/m ³ (ECETOC TRA worker v3) | 0,146 | |
| dermal | systemic | long-term | 1,645 mg/kg bw/day (ECETOC TRA worker v3) | 0,139 | |
| combined routes | systemic | long-term | | 0,501 | |

3.3.10. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) (PROC8b)



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| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,6 mg/m ³ (ECETOC TRA worker v3) | 0,072 | |
| inhalative | systemic | short-term | 2,4 mg/m ³ (ECETOC TRA worker v3) | 0,029 | |
| dermal | systemic | long-term | 8,226 mg/kg bw/day (ECETOC TRA worker v3) | 0,607 | |
| combined routes | systemic | long-term | | 0,769 | |

3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNEco1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf



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ES4: Use as intermediate for the production of other substances

4.1. Title section

| Structured Short Title | : Use at industrial sites, Use as intermediate for the production of other substances; Polymer preparations and compounds |
|------------------------|--|
| | (PC32).; Cosmetics, personal care products (PC39).; Manufacture of bulk, large scale chemicals (including petroleum products) (SU8). |

| Environment | | | |
|-------------|--|--------|--|
| CS1 | Use as intermediate for the production of other substances | ERC6a | |
| Worker | | | |
| CS2 | Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions | PROC1 | |
| CS3 | Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions | PROC2 | |
| CS4 | Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition | PROC3 | |
| CS5 | Chemical production where opportunity for exposure arises | PROC4 | |
| CS6 | Mixing or blending in batch processes | PROC5 | |
| CS7 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities | PROC8a | |
| CS8 | Transfer of substance or mixture (charging/discharging) at dedicated facilities | PROC8b | |
| CS9 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) | PROC9 | |
| CS10 | Use as laboratory reagent | PROC15 | |
| CS11 | Manual maintenance (cleaning and repair) of machinery | PROC28 | |



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4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Use of intermediate (ERC6a)

| Conditions and measures related to sewage treatment plant | | | |
|---|---|--|--|
| STP type | : | Municipal Sewage Treatment Plant | |
| Additional information on STP | : | Biological elimination | |
| STP sludge treatment | : | Controlled application of sewage sludge to agricultural soil | |
| STP effluent | : | 2.000 m³/d | |
| Other conditions affecting environmental exposure | | | |
| Receiving surface water flow | : | 18.000 m³/d | |
| Local freshwater dilution factor | : | 10 | |

4.2.2. Control of worker exposure:Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

| Product (article) characteristics | | | |
|---|--|--|--|
| Covers concentrations up to 10 |) % | | |
| Physical form of product | : Solid, medium dustiness | | |
| Amount used, frequency and duration of use (or from service life) | | | |
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 40 °C | | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | | |





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Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately.

Ensure daily cleaning of the equipment.

4.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

| Product (article) characteristi | cs | |
|---|--|--|
| Covers concentrations up to 10 | 0 % | |
| Physical form of product | : Solid, medium dustiness | |
| Amount used, frequency and | duration of use (or from service life) | |
| Duration | : Covers daily exposures up to 8 hours | |
| Other conditions affecting workers exposure | | |
| Indoor or outdoor use | : Indoor use | |
| Temperature | : 40 °C | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | |
| Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment. | | |
| 4.2.4. Control of worker exposure:Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) | | |
| Product (article) characteristi | cs | |
| Covers concentrations up to 10 | 0 % | |
| Physical form of product | : Solid, medium dustiness | |



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| Amount used, frequency and duration of use (or from service life) | | | |
|---|--|--|--|
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 40 °C | | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | | |

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

4.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics

Covers concentrations up to 10 %

Physical form of product

: Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use





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Temperature

: 40 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

4.2.6. Control of worker exposure: Mixing or blending in batch processes (PROC5)

| Product (article) character | istics | |
|---|--|--|
| Covers concentrations up to | 0 10 % | |
| Physical form of product | : Solid, medium dustiness | |
| Amount used, frequency a | and duration of use (or from service life) | |
| Duration | : Covers daily exposures up to 8 hours | |
| Conditions and measures | related to personal protection, hygiene and health evaluation | |
| | cted to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. r to section 8 of the SDS. of 80 % | |
| Indoor or outdoor use | : Indoor use | |
| Temperature | : 40 °C | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | |
| personnel operating under s | leaning and maintenance of equipment and machines. | |



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4.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

| Product (article) characteris | tics |
|-------------------------------|--|
| Covers concentrations up to 1 | 0 % |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency an | d duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures re | elated to personal protection, hygiene and health evaluation |
| • | ed to extend to other parts of the body, then these body parts should also arments in a manner equivalent to those described for the hands. to section 8 of the SDS. |
| Other conditions affecting v | vorkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice ad | vice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under su | aning and maintenance of equipment and machines. |

4.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

| Product (article) characteristics | |
|-----------------------------------|--|
| Covers concentrations up to 10 % | |
| | |



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|---|-----------------------------|---|--|
| Physical form of product | : Solid, medium dustiness | | |
| Amount used, frequency and duration of use (or from service life) | | | |
| Duration | : Covers daily exposures up | to 8 hours | |
| Conditions and measures related to personal protection, hygiene and health evaluation | | | |

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

4.2.9. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Product (article) characteristic | S | | | | | |
|----------------------------------|---|--|--|--|--|--|
| Covers concentrations up to 10 % | % | | | | | |
| Physical form of product | : Solid, medium dustiness | | | | | |
| Amount used, frequency and c | Amount used, frequency and duration of use (or from service life) | | | | | |
| Duration | : Covers daily exposures up to 8 hours | | | | | |
| Conditions and measures rela | ted to personal protection, hygiene and health evaluation | | | | | |





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Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Indoor or outdoor use

: Indoor use :

40 °C

Temperature

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

4.2.10. Control of worker exposure: Use as laboratory reagent (PROC15)

| Product (article) characterist | ics |
|--|--|
| Covers concentrations up to 10 |)% |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and | I duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Other conditions affecting w | orkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice adv | rice. Obligations according to Article 37(4) of REACH do not apply |
| Assumes that activities are unc personnel operating under sup | lertaken with appropriate and well maintained equipment by trained ervision. |

Ensure regular inspection, cleaning and maintenance of equipment and machines.



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Clear spills immediately. Ensure daily cleaning of the equipment.

4.2.11. Control of worker exposure:Manual maintenance (cleaning and repair) of machinery (PROC28)

| Product (article) characteri | stics |
|------------------------------|--|
| Covers concentrations up to | 10 % |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency a | nd duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures | related to personal protection, hygiene and health evaluation |
| | ted to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. to section 8 of the SDS. |
| Other conditions affecting | workers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice a | dvice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under su | eaning and maintenance of equipment and machines. |



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4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure: Use of intermediate (ERC6a)

| Release route | Release rate Release estimation me | |
|---------------|------------------------------------|--------------------------|
| Water | 3 kg/day | Estimated release factor |
| Air | 0,5 kg/day | Estimated release factor |
| Soil | 0 kg/day | Estimated release factor |

| Compartment | Exposure level | RCR |
|----------------------------------|-------------------------------------|--------|
| Freshwater | 0,147 mg/L (EUSES) | 0,287 |
| Freshwater sediment | 3,751 mg/kg dry weight (EUSES) | 0,287 |
| Marine water | 0,015 mg/L (EUSES) | 0,287 |
| Marine sediment | 0,375 mg/kg dry weight (EUSES) | 0,287 |
| Sewage treatment plant | 1,46 mg/L (EUSES) | 0,015 |
| Agricultural soil | 1,011 mg/kg dry weight (EUSES) | 0,437 |
| Man via environment - Inhalation | 0,0000114 mg/m ³ (EUSES) | < 0,01 |
| Man via environment - Oral | 0,00921 mg/kg bw/day (EUSES) | 0,022 |
| combined routes | | 0,022 |

4.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|---|--------|---------|
| inhalative | systemic | long-term | 0,01 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| inhalative | systemic | short-term | 0,04 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 0,034 mg/kg bw/day (ECETOC | < 0,01 | |



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| | | | TRA worker v3) | | |
|-----------------|----------|-----------|----------------|--------|--|
| combined routes | systemic | long-term | | < 0,01 | |

4.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,5 mg/m³ (ECETOC TRA worker v3) | 0,06 | |
| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
| dermal | systemic | long-term | 1,37 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,176 | |

4.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 0,69 mg/kg bw/day (ECETOC TRA worker v3) | 0,058 | |
| combined routes | systemic | long-term | | 0,179 | |

4.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

| Exposure route Health effect Exposure indicator | Exposure level | RCR | Remarks |
|---|----------------|-----|---------|
|---|----------------|-----|---------|



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| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
|-----------------|----------|------------|---|-------|--|
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,719 | |

4.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

4.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |



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|-----------------|----------|---------------------------|---|
| | | | |
| combined routes | systemic | long-term | 0,835 |

4.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,353 | |

4.3.9. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,719 | |

4.3.10. Worker exposure: Use as laboratory reagent (PROC15)

| Exposure route | | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|----------|-----------------------|--|------|---------|
| inhalative | systemic | long-term | 0,5 mg/m³ (ECETOC TRA worker v3) | 0,06 | |



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| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
|-----------------|----------|------------|--|-------|--|
| dermal | systemic | long-term | 0,34 mg/kg bw/day (ECETOC TRA worker v3) | 0,029 | |
| combined routes | systemic | long-term | | 0,089 | |

4.3.11. Worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC28)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

4.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNEco1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf



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ES5: Use as additive in foams

5.1. Title section

| Structured Short Title : Use at industrial sites, Use as additive in foams; Laboratory chemicals (PC21).; Polymer preparations and compounds (PC32).; Manufacture of rubber products (SU11).; Manufacture of plastics products, including compounding and conversion (SU12).; Manufacture of furniture (SU18). |
|--|
|--|

| Environm | ient | |
|----------|--|--------|
| CS1 | Use as additive in foams | ERC5 |
| Worker | | |
| CS2 | Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions | PROC1 |
| CS3 | Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions | PROC2 |
| CS4 | Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition | PROC3 |
| CS5 | Chemical production where opportunity for exposure arises | PROC4 |
| CS6 | Mixing or blending in batch processes | PROC5 |
| CS7 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities | PROC8a |
| CS8 | Transfer of substance or mixture (charging/discharging) at dedicated facilities | PROC8b |
| CS9 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) | PROC9 |
| CS10 | Use as laboratory reagent | PROC15 |
| CS11 | Manual activities involving hand contact | PROC19 |
| CS12 | Manual maintenance (cleaning and repair) of machinery | PROC28 |



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5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Use at industrial site leading to inclusion into/onto article (ERC5)

| Conditions and measures related to sewage treatment plant | | | | |
|---|--|--|--|--|
| STP type | : Municipal Sewage Treatment Plant | | | |
| Additional information on STP | : Biological elimination | | | |
| STP sludge treatment | : Controlled application of sewage sludge to agricultural soil | | | |
| STP effluent | : 2.000 m ³ /d | | | |
| Other conditions affecting environment | onmental exposure | | | |
| Receiving surface water flow | : 18.000 m³/d | | | |
| Local freshwater dilution factor | : 10 | | | |

5.2.2. Control of worker exposure:Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

| Product (article) characteristics | | | | |
|---|--|--|--|--|
| Covers percentage substance in the p | product up to 100 %. | | | |
| Physical form of product | : Solid, medium dustiness | | | |
| Amount used, frequency and duration of use (or from service life) | | | | |
| Duration | : Covers daily exposures up to 8 hours | | | |
| Other conditions affecting workers exposure | | | | |
| Indoor or outdoor use | : Indoor use | | | |
| Temperature | : 40 °C | | | |



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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product (article) characteristics Covers percentage substance in the product up to 100 %. Physical form of product : Solid, medium dustiness Amount used, frequency and duration of use (or from service life) Duration : Covers daily exposures up to 8 hours Other conditions affecting workers exposure Indoor or outdoor use : Indoor use Temperature : 40 °C Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply Assumes that activities are undertaken with appropriate and well maintained equipment by trained

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Product (article) characteristics





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Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

Other conditions affecting workers exposure

 Indoor or outdoor use
 : Indoor use

 Temperature
 : 40 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.2.5. Control of worker exposure:Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %



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Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.2.6. Control of worker exposure: Mixing or blending in batch processes (PROC5)

| Product (article) characteristics | |
|-------------------------------------|--|
| Covers percentage substance in th | ie product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and du | ration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| | d to personal protection, hygiene and health evaluation |
| | extend to other parts of the body, then these body parts should also onts in a manner equivalent to those described for the hands. ction 8 of the SDS. |
| Other conditions affecting worke | ≩rs exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice advice. | Obligations according to Article 37(4) of REACH do not apply |
| Assumes that activities are underta | ken with appropriate and well maintained equipment by trained |



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personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

5.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product

: Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)



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Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

:

Duration

Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.2.9. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Product (article) characteristics | | |
|---|-------------------------|--|
| Covers percentage substance in the produ | uct up to 100 %. | |
| Physical form of product : | Solid, medium dustiness | |
| Amount used, frequency and duration of use (or from service life) | | |





:

Melamine

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Duration

Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.2.10. Control of worker exposure: Use as laboratory reagent (PROC15)

| Product (article) characteristics | | | |
|---|--|--|--|
| Covers percentage substance | in the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | | |
| Amount used, frequency an | d duration of use (or from service life) | | |
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 40 °C | | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | | |





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Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

5.2.11. Control of worker exposure: Manual activities involving hand contact (PROC19)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers exposure up to 4 hrs

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 95 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.2.12. Control of worker exposure:Manual maintenance (cleaning and repair) of machinery (PROC28)





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Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

:

Duration

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

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Use at industrial site leading to inclusion into/onto article (ERC5)

| Release route | Release rate | Release estimation method |
|---------------|--------------|---------------------------|
| Water | 3 kg/day | Estimated release factor |



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| Air | 0,5 kg/day | Estimated release factor |
|------|------------|--------------------------|
| Soil | 0 kg/day | Estimated release factor |

| Compartment | Exposure level | RCR |
|----------------------------------|--------------------------------|--------|
| Freshwater | 0,147 mg/L (EUSES) | 0,287 |
| Freshwater sediment | 3,751 mg/kg dry weight (EUSES) | 0,287 |
| Marine water | 0,015 mg/L (EUSES) | 0,287 |
| Marine sediment | 0,375 mg/kg dry weight (EUSES) | 0,287 |
| Sewage treatment plant | 1,46 mg/L (EUSES) | 0,015 |
| Agricultural soil | 1,011 mg/kg dry weight (EUSES) | 0,437 |
| Man via environment - Inhalation | 0,0000114 mg/m3 (EUSES) | < 0,01 |
| Man via environment - Oral | 0,00921 mg/kg bw/day (EUSES) | 0,022 |
| combined routes | | 0,022 |

5.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|--------|---------|
| inhalative | systemic | long-term | 0,01 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| inhalative | systemic | short-term | 0,04 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 0,034 mg/kg bw/day (ECETOC TRA worker v3) | < 0,01 | |
| combined routes | systemic | long-term | | < 0,01 | |

5.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

| Exposure routeHealth effectExposure indicator | Exposure level | RCR | Remarks |
|--|----------------|-----|---------|
|--|----------------|-----|---------|



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| inhalative | systemic | long-term | 0,5 mg/m ³ (ECETOC TRA worker v3) | 0,06 | |
|-----------------|----------|------------|--|-------|--|
| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
| dermal | systemic | long-term | 1,37 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,176 | |

5.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 0,69 mg/kg bw/day (ECETOC TRA worker v3) | 0,058 | |
| combined routes | systemic | long-term | | 0,179 | |

5.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|--------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |



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|-----------------|----------|---------------------|--|-------|--|
| | | | | | |
| combined routes | systemic | long-term | | 0,719 | |

5.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

5.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

5.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

| Exposure route | | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|----------|-----------------------|---|------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |



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| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
|-----------------|----------|------------|---|-------|--|
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,353 | |

5.3.9. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,719 | |

5.3.10. Worker exposure: Use as laboratory reagent (PROC15)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,5 mg/m ³ (ECETOC TRA worker v3) | 0,06 | |
| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
| dermal | systemic | long-term | 0,34 mg/kg bw/day (ECETOC TRA worker v3) | 0,029 | |
| combined routes | systemic | long-term | | 0,089 | |

5.3.11. Worker exposure: Manual activities involving hand contact (PROC19)



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| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 3 mg/m ³ (ECETOC TRA worker v3) | 0,361 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 7,072 mg/kg bw/day (ECETOC TRA worker v3) | 0,599 | |
| combined routes | systemic | long-term | | 0,961 | |

5.3.12. Worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC28)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

5.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNE co1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf



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ES6: Use as additive in intumescent coatings

6.1. Title section

| Structured Short Title | : Use at industrial sites, Use as additive in intumescent coatings; Coatings and paints, thinners, paint removers (PC9a).; Polymer preparations and compounds (PC32).; Manufacture of plastics products, including compounding and conversion (SU12).; General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment (SU17).; Building and construction work (SU19). |
|------------------------|--|
|------------------------|--|

| Environment | | |
|-------------|--|--------|
| CS1 | Use as additive in intumescent coatings | ERC5 |
| Worker | | |
| CS2 | Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition | PROC3 |
| CS3 | Chemical production where opportunity for exposure arises | PROC4 |
| CS4 | Mixing or blending in batch processes | PROC5 |
| CS5 | Industrial spraying (with Local Exhaust Ventilation) | PROC7 |
| CS6 | Industrial spraying (without Local Exhaust Ventilation) | PROC7 |
| CS7 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) | PROC8a |
| CS8 | Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) | PROC8b |
| CS9 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) | PROC9 |
| CS10 | Roller application or brushing | PROC10 |
| CS11 | Treatment of articles by dipping and pouring | PROC13 |
| CS12 | Use as laboratory reagent | PROC15 |



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| CS13 | Manual activities involving hand contact | PROC19 |
|------|--|--------|
| CS14 | Manual maintenance (cleaning and repair) of machinery (solid) | PROC28 |
| CS15 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) | PROC8a |
| CS16 | Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) | PROC8b |
| CS17 | Manual maintenance (cleaning and repair) of machinery (liquid) | PROC28 |

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Use at industrial site leading to inclusion into/onto article (ERC5)

| Conditions and measures related to sewage treatment plant | | | |
|---|---|--|--|
| STP type | : | Municipal Sewage Treatment Plant | |
| Additional information on STP | : | Biological elimination | |
| STP sludge treatment | : | Controlled application of sewage sludge to agricultural soil | |
| STP effluent | : | 2.000 m³/d | |
| Other conditions affecting environmental exposure | | | |
| Receiving surface water flow | : | 18.000 m³/d | |
| Local freshwater dilution factor | : | 10 | |

6.2.2. Control of worker exposure:Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

| Product (article) characteristics | | |
|---|---------------------------|--|
| Covers percentage substance in the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | |





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| Amount used, frequency and duration of use (or from service life) | | | |
|---|--|--|--|
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 40 °C | | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | | |

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.2.3. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product

: Solid, medium dustiness

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor use





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Temperature

: 40 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.2.4. Control of worker exposure: Mixing or blending in batch processes (PROC5)

| Product (article) characteris | tics |
|-------------------------------|--|
| Covers percentage substance | in the product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and | d duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures re | elated to personal protection, hygiene and health evaluation |
| | ed to extend to other parts of the body, then these body parts should also arments in a manner equivalent to those described for the hands. to section 8 of the SDS. f 80 % |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice ad | vice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under sup | aning and maintenance of equipment and machines. |



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6.2.5. Control of worker exposure: Industrial spraying (with Local Exhaust Ventilation) (PROC7)

| Product (article) character | istics |
|--|--|
| Covers concentrations up to | 30 % |
| Physical form of product | : Liquid |
| Amount used, frequency a | and duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Technical and organisatio | nal conditions and measures |
| Local exhaust ventilation Inhalation - minimum efficier | ncy of 95 % |
| Conditions and measures | related to personal protection, hygiene and health evaluation |
| | cted to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. r to section 8 of the SDS. |
| Other conditions affecting | workers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice a | dvice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under s | leaning and maintenance of equipment and machines. |

6.2.6. Control of worker exposure: Industrial spraying (without Local Exhaust Ventilation) (PROC7)



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Product (article) characteristics

Covers concentrations up to 30 %

Physical form of product : Liquid

Amount used, frequency and duration of use (or from service life)

:

Duration

Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Respiratory protection

Inhalation - minimum efficiency of 90 %

Other conditions affecting workers exposure

 Indoor or outdoor use
 : Indoor use

 Temperature
 : 115 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) (PROC8a)

| Product (article) characteristics | | |
|---|---------------------------|--|
| Covers percentage substance in the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | |



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Amount used, frequency and duration of use (or from service life)

:

Duration

Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) (PROC8b)

| Product (article) characteristic | CS |
|----------------------------------|--|
| Covers percentage substance ir | n the product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and | duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures rela | ated to personal protection, hygiene and health evaluation |
| Wear suitable gloves tested to E | N374. |

If skin contamination is expected to extend to other parts of the body, then these body parts should also



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be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.2.9. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Product (article) characteristics Covers percentage substance in the product up to 100 %. Physical form of product Solid, medium dustiness : Amount used, frequency and duration of use (or from service life) Duration Covers daily exposures up to 8 hours : Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 80 % Other conditions affecting workers exposure Indoor or outdoor use : Indoor use : 40 °C Temperature



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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.2.10. Control of worker exposure:Roller application or brushing (PROC10)

| Product (article) characteris | stics |
|-------------------------------|--|
| Covers concentrations up to 3 | 30 % |
| Physical form of product | : Liquid |
| Amount used, frequency ar | nd duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures r | elated to personal protection, hygiene and health evaluation |
| | ted to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. to section 8 of the SDS. of 80 % |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice ac | dvice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under su | eaning and maintenance of equipment and machines. |



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6.2.11. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

| Product (article) characteri | stics |
|------------------------------|--|
| Covers concentrations up to | 30 % |
| Physical form of product | : Liquid |
| Amount used, frequency a | nd duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures r | related to personal protection, hygiene and health evaluation |
| | ted to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. to section 8 of the SDS. of 80 % |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice ad | dvice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under su | eaning and maintenance of equipment and machines. |

6.2.12. Control of worker exposure: Use as laboratory reagent (PROC15)

| Product (article) characteristics | | |
|---|---------------------------|--|
| Covers percentage substance in the product up to 100 %. | | |
| Physical form of product | : Solid, medium dustiness | |





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| Amount used, frequency and dura | tior | n of use (or from service life) |
|------------------------------------|------|--------------------------------------|
| Duration | : | Covers daily exposures up to 8 hours |
| Other conditions affecting workers | s ex | posure |
| Indoor or outdoor use | : | Indoor use |
| Temperature | : | 40 °C |

6.2.13. Control of worker exposure: Manual activities involving hand contact (PROC19)

| Product (article) character | istics |
|---------------------------------|---|
| Covers concentrations up to | 30 % |
| Physical form of product | : Liquid |
| Amount used, frequency a | nd duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures | related to personal protection, hygiene and health evaluation |
| If skin contamination is expect | |
| Other conditions affecting | workers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |
| Additional good practice a | dvice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under se | leaning and maintenance of equipment and machines. |



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6.2.14. Control of worker exposure:Manual maintenance (cleaning and repair) of machinery (solid) (PROC28)

Product (article) characteristics Covers percentage substance in the product up to 100 %. Physical form of product : Solid, medium dustiness Amount used, frequency and duration of use (or from service life) Duration Covers daily exposures up to 8 hours : Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 80 % Other conditions affecting workers exposure Indoor or outdoor use : Indoor use : 40 °C Temperature Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

6.2.15. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) (PROC8a)

| Product (article) characteristics |
|-----------------------------------|
| Covers concentrations up to 30 % |
| |





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Physical form of product : Liquid

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Indoor or outdoor use

Temperature

: Indoor use : 115 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.2.16. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) (PROC8b)

| Product (article) characteristics | |
|-----------------------------------|---|
| Covers concentrations up to 30 % | |
| Physical form of product | : Liquid |
| Amount used, frequency and dura | tion of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures related | to personal protection, hygiene and health evaluation |



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Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor | or | outdoor | use |
|--------|----|---------|-----|
|--------|----|---------|-----|

Temperature

: Indoor use

: 115 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.2.17. Control of worker exposure: Manual maintenance (cleaning and repair) of machinery (liquid) (PROC28)

Product (article) characteristics Covers concentrations up to 30 % Physical form of product : Liquid

Amount used, frequency and duration of use (or from service life)

Duration

Covers daily exposures up to 8 hours :

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure



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|-------------------------------|--|---|
| Indoor or outdoor use | : Indoor use | |
| Temperature | : 115 °C | |
| Additional good practice a | dvice. Obligations according to Article | e 37(4) of REACH do not apply |
| Assumes that activities are u | ndertaken with appropriate and well main | ntained equipment by trained |

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Use at industrial site leading to inclusion into/onto article (ERC5)

| Release route | Release rate Release estimation metho | |
|---------------|---------------------------------------|--------------------------|
| Water | 3 kg/day | Estimated release factor |
| Air | 0,5 kg/day | Estimated release factor |
| Soil | 0 kg/day | Estimated release factor |

| Compartment | Exposure level | RCR |
|----------------------------------|--------------------------------|--------|
| Freshwater | 0,147 mg/L (EUSES) | 0,287 |
| Freshwater sediment | 3,751 mg/kg dry weight (EUSES) | 0,287 |
| Marine water | 0,015 mg/L (EUSES) | 0,287 |
| Marine sediment | 0,375 mg/kg dry weight (EUSES) | 0,287 |
| Sewage treatment plant | 1,46 mg/L (EUSES) | 0,015 |
| Agricultural soil | 1,032 mg/kg dry weight (EUSES) | 0,446 |
| Man via environment - Inhalation | 0,0000114 mg/m3 (EUSES) | < 0,01 |
| Man via environment - Oral | 0,013 mg/kg bw/day (EUSES) | 0,031 |
| combined routes | | 0,031 |



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6.3.2. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 1 mg/m³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 0,69 mg/kg bw/day (ECETOC TRA worker v3) | 0,058 | |
| combined routes | systemic | long-term | | 0,179 | |

6.3.3. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg bw/day (ECETOC TRA worker v3) | 0,116 | |
| combined routes | systemic | long-term | | 0,719 | |

6.3.4. Worker exposure: Mixing or blending in batch processes (PROC5)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |



combined routes

systemic

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|-------------|----------|---------------------------|---|-------|--------------------------------------|
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |

0,835

6.3.5. Worker exposure: Industrial spraying (with Local Exhaust Ventilation) (PROC7)

long-term

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,4 mg/m ³ (Stoffenmanager v5.6.10) | 0,048 | |
| inhalative | systemic | short-term | 0,4 mg/m ³ (Stoffenmanager v5.6.10) | > 0,01 | |
| dermal | systemic | long-term | 8,572 mg/kg bw/day (ECETOC TRA worker v3) | 0,726 | |
| combined routes | systemic | long-term | | 0,775 | |

6.3.6. Worker exposure: Industrial spraying (without Local Exhaust Ventilation) (PROC7)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,795 mg/m ³ (Stoffenmanager v5.6.10) | 0,096 | |
| inhalative | systemic | short-term | 0,795 mg/m ³ (Stoffenmanager v5.6.10) | > 0,01 | |
| dermal | systemic | long-term | 8,572 mg/kg bw/day (ECETOC TRA worker v3) | 0,726 | |
| combined routes | systemic | long-term | | 0,822 | |

6.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (solid) (PROC8a)



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| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

6.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (solid) (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,353 | |

6.3.9. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|--------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 1,372 mg/kg | 0,116 | |



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| | | | bw/day (ECETOC TRA worker v3) | | |
|-----------------|----------|-----------|----------------------------------|-------|--|
| combined routes | systemic | long-term | | 0,719 | |

6.3.10. Worker exposure: Roller application or brushing (PROC10)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 3,59 mg/m ³ (Stoffenmanager v5.6.10) | 0,433 | |
| inhalative | systemic | short-term | 3,59 mg/m ³ (Stoffenmanager v5.6.10) | 0,044 | |
| dermal | systemic | long-term | 5,486 mg/kg bw/day (ECETOC TRA worker v3) | 0,465 | |
| combined routes | systemic | long-term | | 0,897 | |

6.3.11. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

6.3.12. Worker exposure: Use as laboratory reagent (PROC15)

| Exposure route Health effect Exposure indicator Exposure level RCR Remarks |
|--|
|--|



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|-----------------|--------------------------------------|------------|--|---|--|
| inhalative | systemic | long-term | 0,5 mg/m³ (ECETOC TRA worker v3) | 0,06 | |
| inhalative | systemic | short-term | 2 mg/m ³ (ECETOC TRA worker v3) | 0,024 | |
| dermal | systemic | long-term | 0,34 mg/kg bw/day (ECETOC TRA worker v3) | 0,029 | |
| combined routes | systemic | long-term | | 0,089 | |

6.3.13. Worker exposure: Manual activities involving hand contact (PROC19)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 1,74 mg/m ³ (Stoffenmanager v5.6.10) | 0,21 | |
| inhalative | systemic | short-term | 1,74 mg/m ³ (Stoffenmanager v5.6.10) | 0,021 | |
| dermal | systemic | long-term | 7,072 mg/kg bw/day (ECETOC TRA worker v3) | 0,599 | |
| combined routes | systemic | long-term | | 0,809 | |

6.3.14. Worker exposure: Manual maintenance (cleaning and repair) of machinery (solid) (PROC28)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,742 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |



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|-------------------------|---------------------------|---|
| combined routes systemi | c long-term | 0.835 |

6.3.15. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (liquid) (PROC8a)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

6.3.16. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (liquid) (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

6.3.17. Worker exposure: Manual maintenance (cleaning and repair) of machinery (liquid) (PROC28)

| Exposure route Health effect Exposure indicator Exposure level RCR Remarks |
|---|
|---|



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| inhalative | systemic | long-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | 0,063 |
|-----------------|----------|------------|--|--------|
| inhalative | systemic | short-term | 0,525 mg/m³ (ECETOC TRA worker v3) | < 0,01 |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 |
| combined routes | systemic | long-term | | 0,296 |

6.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNE co1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf



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ES7: Use as additive in intumescent coatings

7.1. Title section

| products, including compounding and conversion (SU12).; Building and construction work (SU19). |
|---|
|---|

| Environn | nent | |
|----------|---|--------------|
| CS1 | Use as additive in intumescent coatings | ERC8c, ERC8f |
| Worker | | |
| CS2 | Mixing or blending in batch processes | PROC5 |
| CS3 | Transfer of substance or mixture (charging/discharging) at non dedicated-facilities | PROC8a |
| CS4 | Transfer of substance or mixture (charging/discharging) at dedicated facilities | PROC8b |
| CS5 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) | PROC9 |
| CS6 | Roller application or brushing | PROC10 |
| CS7 | Non-industrial spraying | PROC11 |
| CS8 | Treatment of articles by dipping and pouring | PROC13 |
| CS9 | Manual maintenance (cleaning and repair) of machinery | PROC28 |

7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Widespread use leading to inclusion into/onto article (indoor) (ERC8c) / Widespread use leading to inclusion into/onto article (outdoor) (ERC8f)



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| Conditions and measures related to sewage treatment plant | | | |
|---|--|--|--|
| STP type | : Municipal Sewage Treatment Plant | | |
| Additional information on STP | : Biological elimination | | |
| STP sludge treatment | : Controlled application of sewage sludge to agricultural soil | | |
| STP effluent | : 2.000 m³/d | | |
| Other conditions affecting environmental exposure | | | |
| Receiving surface water flow | : 18.000 m³/d | | |
| Local freshwater dilution factor | : 10 | | |

7.2.2. Control of worker exposure: Mixing or blending in batch processes (PROC5)

| Product (article) characteris | tics |
|-------------------------------|--|
| Covers concentrations up to 3 | 0 % |
| Physical form of product | : Liquid |
| Amount used, frequency an | d duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| | elated to personal protection, hygiene and health evaluation |
| | ed to extend to other parts of the body, then these body parts should also arments in a manner equivalent to those described for the hands. to section 8 of the SDS. |
| Other conditions affecting w | |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice ad | vice. Obligations according to Article 37(4) of REACH do not apply |



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Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. Clear spills immediately. Ensure daily cleaning of the equipment.

7.2.3. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

| Product (article) character | istics |
|-----------------------------|---|
| Covers concentrations up to | 30 % |
| Physical form of product | : Liquid |
| Amount used, frequency a | and duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures | related to personal protection, hygiene and health evaluation |
| • | cted to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. r to section 8 of the SDS. of 80 % |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice a | dvice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under s | eaning and maintenance of equipment and machines. |



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7.2.4. Control of worker exposure:Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Product (article) characteristics

Covers concentrations up to 30 %

Physical form of product : Liquid

Amount used, frequency and duration of use (or from service life)

Duration

: Covers daily exposures up to 8 hours

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

Wear suitable gloves tested to EN374.

If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

| Indoor or outdoor use | | Indoor use |
|-----------------------|--|------------|
| Temperature | | 115 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

7.2.5. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Product (article) characteristics | | | |
|-----------------------------------|---|--------|--|
| Covers concentrations up to 30 % | | | |
| Physical form of product | : | Liquid | |



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| Amount used, frequency and duration of use (or from service life) | | | |
|---|--|--|--|
| Duration | : Covers daily exposures up to 8 hours | | |
| Other conditions affecting workers exposure | | | |
| Indoor or outdoor use | : Indoor use | | |
| Temperature | : 115 °C | | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | | |
| Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. | | | |

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

7.2.6. Control of worker exposure:Roller application or brushing (PROC10)

| Product (article) characteris | stics | | | | |
|--|--|--|--|--|--|
| Covers concentrations up to 3 | 30 % | | | | |
| Physical form of product | : Liquid | | | | |
| Amount used, frequency ar | nd duration of use (or from service life) | | | | |
| Duration | : Covers daily exposures up to 8 hours | | | | |
| Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. | | | | | |
| If skin contamination is expect be protected with impervious of For further specification, refer | ed to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. to section 8 of the SDS. | | | | |
| If skin contamination is expect be protected with impervious of For further specification, refer Dermal - minimum efficiency of Other conditions affecting v | ed to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. to section 8 of the SDS. of 80 % workers exposure | | | | |
| If skin contamination is expect be protected with impervious of For further specification, refer Dermal - minimum efficiency of | ed to extend to other parts of the body, then these body parts should also garments in a manner equivalent to those described for the hands. to section 8 of the SDS. of 80 % | | | | |



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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

7.2.7. Control of worker exposure:Non-industrial spraying (PROC11)

| Product (article) character | ristics |
|---|--|
| Covers concentrations up to | 30 % |
| Physical form of product | : Liquid |
| Amount used, frequency a | and duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures | related to personal protection, hygiene and health evaluation |
| If skin contamination is expe be protected with impervious For further specification, refe Dermal - minimum efficiency Respiratory protection | of 90 % |
| Inhalation - minimum efficien | cy of 90 % |
| Other conditions affecting | workers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice a | advice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under s | undertaken with appropriate and well maintained equipment by trained supervision. cleaning and maintenance of equipment and machines. |



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Ensure daily cleaning of the equipment.

7.2.8. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

| Product (article) characterist | ics |
|--------------------------------|---|
| Covers concentrations up to 30 |) % |
| Physical form of product | : Liquid |
| Amount used, frequency and | d duration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Conditions and measures re | lated to personal protection, hygiene and health evaluation |
| | to extend to other parts of the body, then these body parts should also arments in a manner equivalent to those described for the hands. to section 8 of the SDS. |
| Other conditions affecting w | orkers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 115 °C |
| Additional good practice adv | vice. Obligations according to Article 37(4) of REACH do not apply |
| personnel operating under sup | aning and maintenance of equipment and machines. |

7.2.9. Control of worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC28)

Product (article) characteristics

Covers concentrations up to 30 %



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| Melamine | | | | | | | |
|---|---|---|--|--|--|--|--|
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| Physical form of product | : Liquid | | | | | | |
| Amount used, frequency an | d duration of use (or from service life | ə) | | | | | |
| Duration | : Covers daily exposures up | to 8 hours | | | | | |
| Conditions and measures re | elated to personal protection, hygiene | e and health evaluation | | | | | |
| be protected with impervious g For further specification, refer Dermal - minimum efficiency o | Wear suitable gloves tested to EN374. If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 80 % Other conditions affecting workers exposure | | | | | | |
| Indoor or outdoor use | : Indoor use | | | | | | |
| Temperature | : 115 °C | | | | | | |
| Additional good practice ad | vice. Obligations according to Article | e 37(4) of REACH do not apply | | | | | |
| personnel operating under su | aning and maintenance of equipment a | | | | | | |

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure: Widespread use leading to inclusion into/onto article (indoor) (ERC8c) / Widespread use leading to inclusion into/onto article (outdoor) (ERC8f)

| Release route | Release rate | Release estimation method |
|---------------|--------------|---------------------------|
| Water | 0 kg/day | Estimated release factor |
| Air | 0 kg/day | Estimated release factor |
| Soil | 0 kg/day | Estimated release factor |



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| Compartment | Exposure level | RCR |
|----------------------------------|-------------------------------------|--------|
| Freshwater | 0,00059 mg/L (EUSES) | < 0,01 |
| Freshwater sediment | 0,015 mg/kg dry weight (EUSES) | < 0,01 |
| Marine water | 0,00006 mg/L (EUSES) | < 0,01 |
| Marine sediment | 0,00145 mg/kg dry weight (EUSES) | < 0,01 |
| Sewage treatment plant | 0 mg/L (EUSES) | < 0,01 |
| Agricultural soil | 0,00066 mg/kg dry weight (EUSES) | < 0,01 |
| Man via environment - Inhalation | 0 mg/m³ (EUSES) | < 0,01 |
| Man via environment - Oral | 0,00002 mg/kg bw/day (EUSES) | < 0,01 |
| combined routes | | < 0,01 |

7.3.2. Worker exposure: Mixing or blending in batch processes (PROC5)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,835 | |

7.3.3. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

| Exposure route | | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|----------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | 0,063 | |



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|---------------------------------------|----------|------------|--|---|--|
| inhalative | systemic | short-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

7.3.4. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|--------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

7.3.5. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |



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|-----------------|----------|---------------------|--|-------|--|
| | | | | | |
| combined routes | systemic | long-term | | 0,296 | |

7.3.6. Worker exposure: Roller application or brushing (PROC10)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 3,61 mg/m ³ (Stoffenmanager v5.6.10) | 0,435 | |
| inhalative | systemic | short-term | 3,61 mg/m ³ (Stoffenmanager v5.6.10) | 0,044 | |
| dermal | systemic | long-term | 5,486 mg/kg bw/day (ECETOC TRA worker v3) | 0,465 | |
| combined routes | systemic | long-term | | 0,9 | |

7.3.7. Worker exposure: Non-industrial spraying (PROC11)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,398 mg/m ³ (Stoffenmanager v5.6.10) | 0,048 | |
| inhalative | systemic | short-term | 0,398 mg/m ³ (Stoffenmanager v5.6.10) | < 0,01 | |
| dermal | systemic | long-term | 10,71 mg/kg bw/day (ECETOC TRA worker v3) | 0,908 | |
| combined routes | systemic | long-term | | 0,956 | |

7.3.8. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 0,525 mg/m ³ (ECETOC TRA | 0,063 | |



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| | | | worker v3) | | |
|-----------------|----------|------------|--|--------|--|
| inhalative | systemic | short-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

7.3.9. Worker exposure: Manual maintenance (cleaning and repair) of machinery (PROC28)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|--------|---------|
| inhalative | systemic | long-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | 0,063 | |
| inhalative | systemic | short-term | 0,525 mg/m ³ (ECETOC TRA worker v3) | < 0,01 | |
| dermal | systemic | long-term | 2,743 mg/kg bw/day (ECETOC TRA worker v3) | 0,232 | |
| combined routes | systemic | long-term | | 0,296 | |

7.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNEco1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf





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ES8: PU foams - Workers (industrial)

8.1. Title section

| Structured Short Title | : Service life - workers, PU foams - Workers (industrial); Vehicles |
|------------------------|---|
| | covered by End of Life Vehicles (ELV) directive (AC1a).; Plastic |
| | articles (AC13).; Other plastic articles (AC13g). |

| Environm | Environment | | | | | |
|----------|--|--------|--|--|--|--|
| CS1 | PU foams - Workers (industrial) | ERC12a | | | | |
| Worker | | | | | | |
| CS2 | Low energy manipulation and handling of substances bound in/on materials and/or articles | PROC21 | | | | |
| CS3 | High (mechanical) energy work-up of substances bound in/on materials and/or articles | PROC24 | | | | |

8.2. Conditions of use affecting exposure

8.2.1. Control of environmental exposure: Processing of articles at industrial sites with low release (ERC12a)

| Conditions and measures related to sewage treatment plant | | | | |
|---|--|--|--|--|
| : | Municipal Sewage Treatment Plant | | | |
| : | Biological elimination | | | |
| : | Controlled application of sewage sludge to agricultural soil | | | |
| : | 2.000 m³/d | | | |
| Other conditions affecting environmental exposure | | | | |
| Receiving surface water flow : 18.000 m ³ /d | | | | |
| | :: | | | |



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Local freshwater dilution factor : 10

8.2.2. Control of worker exposure:Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

| Product (article) characteristics | | | | |
|---|--|--|--|--|
| Covers percentage substance | in the product up to 100 %. | | | |
| Physical form of product | : Solid, medium dustiness | | | |
| Amount used, frequency and duration of use (or from service life) | | | | |
| Duration | : Covers daily exposures up to 8 hours | | | |
| Other conditions affecting w | orkers exposure | | | |
| Indoor or outdoor use | : Indoor use | | | |
| Temperature | : 40 °C | | | |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply | | | | |
| Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision. Ensure regular inspection, cleaning and maintenance of equipment and machines. | | | | |

Clear spills immediately. Ensure daily cleaning of the equipment.

8.2.3. Control of worker exposure: High (mechanical) energy work-up of substances bound in/on materials and/or articles (PROC24)

| Product (article) characteristics | | | | |
|---|--|--|--|--|
| Covers percentage substance in the product up to 100 %. | | | | |
| Physical form of product | Physical form of product : Solid, medium dustiness | | | |
| Amount used, frequency and duration of use (or from service life) | | | | |
| Duration | : Covers daily exposures up to 8 hours | | | |
| | | | | |





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Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

8.3. Exposure estimation and reference to its source

8.3.1. Environmental release and exposure: Processing of articles at industrial sites with low release (ERC12a)

| Release route | Release rate | Release estimation method |
|---------------|--------------|---------------------------|
| Water | 0 kg/day | Estimated release factor |
| Air | 0 kg/day | Estimated release factor |
| Soil | 0 kg/day | Estimated release factor |

| Compartment | Exposure level | RCR | |
|----------------------------------|----------------------------------|--------|--|
| Freshwater | 0,00059 mg/L (EUSES) | < 0,01 | |
| Freshwater sediment | 0,015 mg/kg dry weight (EUSES) | < 0,01 | |
| Marine water | 0,00006 mg/L (EUSES) | < 0,01 | |
| Marine sediment | 0,00145 mg/kg dry weight (EUSES) | < 0,01 | |
| Sewage treatment plant | 0 mg/L (EUSES) | < 0,01 | |
| Agricultural soil | 0,00066 mg/kg dry weight (EUSES) | < 0,01 | |
| Man via environment - Inhalation | 0 mg/m ³ (EUSES) | < 0,01 | |



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| Man via environment - Oral | 0,00002 mg/kg bw/day (EUSES) | < 0,01 |
|----------------------------|------------------------------|--------|
| combined routes | | < 0,01 |

8.3.2. Worker exposure: Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 3 mg/m ³ (ECETOC TRA worker v3) | 0,361 | |
| inhalative | systemic | short-term | 12 mg/m ³ (ECETOC TRA worker v3) | 0,146 | |
| dermal | systemic | long-term | 2,83 mg/kg bw/day (ECETOC TRA worker v3) | 0,24 | |
| combined routes | systemic | long-term | | 0,601 | |

8.3.3. Worker exposure: High (mechanical) energy work-up of substances bound in/on materials and/or articles (PROC24)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 2,83 mg/kg bw/day (ECETOC TRA worker v3) | 0,24 | |
| combined routes | systemic | long-term | | 0,36 | |

8.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management



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measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNEco1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf



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ES9: Intumescent coatings - Workers (industrial)

9.1. Title section

| Structured Short Title | : | Service life - workers, Intumescent coatings - Workers |
|------------------------|---|---|
| | | (industrial); Fabrics, textiles and apparel: Large surface area articles (AC5a).; Metal articles: Large surface area articles (AC7a).; Plastic articles (AC13). |

| Environm | Environment | | | | |
|----------|--|--------|--|--|--|
| CS1 | Intumescent coatings - Workers (industrial) | ERC12a | | | |
| Worker | | | | | |
| CS2 | Low energy manipulation and handling of substances bound in/on materials and/or articles | PROC21 | | | |
| CS3 | High (mechanical) energy work-up of substances bound in/on materials and/or articles | PROC24 | | | |

9.2. Conditions of use affecting exposure

9.2.1. Control of environmental exposure: Processing of articles at industrial sites with low release (ERC12a)

| Conditions and measures related to sewage treatment plant | | | | |
|---|--------------|--|--|--|
| STP type | : | Municipal Sewage Treatment Plant | | |
| Additional information on STP | : | Biological elimination | | |
| STP sludge treatment | : | Controlled application of sewage sludge to agricultural soil | | |
| STP effluent | : 2.000 m³/d | | | |
| Other conditions affecting environmental exposure | | | | |
| Receiving surface water flow | : | 18.000 m³/d | | |



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Local freshwater dilution factor : 10

9.2.2. Control of worker exposure:Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

| Product (article) characteristics | | | | | |
|-----------------------------------|--|--|--|--|--|
| Covers percentage substance | in the product up to 100 %. | | | | |
| Physical form of product | : Solid, medium dustiness | | | | |
| Amount used, frequency and | d duration of use (or from service life) | | | | |
| Duration | : Covers daily exposures up to 8 hours | | | | |
| Other conditions affecting w | orkers exposure | | | | |
| Indoor or outdoor use | : Indoor use | | | | |
| Temperature | : 40 °C | | | | |
| Additional good practice adv | vice. Obligations according to Article 37(4) of REACH do not apply | | | | |
| personnel operating under sup | dertaken with appropriate and well maintained equipment by trained ervision. aning and maintenance of equipment and machines. | | | | |

Clear spills immediately.

Ensure daily cleaning of the equipment.

9.2.3. Control of worker exposure: High (mechanical) energy work-up of substances bound in/on materials and/or articles (PROC24)

| Product (article) characteristics | | | | | | | |
|---|--|--|--|--|--|--|--|
| Covers percentage substance in the product up to 100 %. | | | | | | | |
| Physical form of product | Physical form of product : Solid, medium dustiness | | | | | | |
| Amount used, frequency and duration of use (or from service life) | | | | | | | |
| Duration | : Covers daily exposures up to 8 hours | | | | | | |
| | | | | | | | |





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Other conditions affecting workers exposure

| Indoor or outdoor use | : | Indoor use |
|-----------------------|---|------------|
| Temperature | : | 40 °C |

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Ensure regular inspection, cleaning and maintenance of equipment and machines.

Clear spills immediately.

Ensure daily cleaning of the equipment.

9.3. Exposure estimation and reference to its source

9.3.1. Environmental release and exposure: Processing of articles at industrial sites with low release (ERC12a)

| Release route | Release rate | Release estimation method | |
|---------------|--------------|---------------------------|--|
| Water | 0 kg/day | Estimated release factor | |
| Air | 0 kg/day | Estimated release factor | |
| Soil | 0 kg/day | Estimated release factor | |

| Compartment | Exposure level | RCR |
|----------------------------------|-------------------------------------|--------|
| Freshwater | 0,00059 mg/L (EUSES) | < 0,01 |
| Freshwater sediment | 0,015 mg/kg dry weight (EUSES) | < 0,01 |
| Marine water | 0,00006 mg/L (EUSES) | < 0,01 |
| Marine sediment | 0,00145 mg/kg dry weight (EUSES) | < 0,01 |
| Sewage treatment plant | 0 mg/L (EUSES) | < 0,01 |
| Agricultural soil | 0,00066 mg/kg dry weight (EUSES) | < 0,01 |
| Man via environment - Inhalation | 0 mg/m ³ (EUSES) | < 0,01 |



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| Man via environment - Oral | 0,00002 mg/kg bw/day (EUSES) | < 0,01 |
|----------------------------|------------------------------|--------|
| combined routes | | < 0,01 |

9.3.2. Worker exposure: Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 3 mg/m ³ (ECETOC TRA worker v3) | 0,361 | |
| inhalative | systemic | short-term | 12 mg/m ³ (ECETOC TRA worker v3) | 0,146 | |
| dermal | systemic | long-term | 2,83 mg/kg bw/day (ECETOC TRA worker v3) | 0,24 | |
| combined routes | systemic | long-term | | 0,601 | |

9.3.3. Worker exposure: High (mechanical) energy work-up of substances bound in/on materials and/or articles (PROC24)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|--|-------|---------|
| inhalative | systemic | long-term | 1 mg/m ³ (ECETOC TRA worker v3) | 0,12 | |
| inhalative | systemic | short-term | 4 mg/m ³ (ECETOC TRA worker v3) | 0,049 | |
| dermal | systemic | long-term | 2,83 mg/kg bw/day (ECETOC TRA worker v3) | 0,24 | |
| combined routes | systemic | long-term | | 0,36 | |

9.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management



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measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

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ES10: Intumescent coatings - Professional Workers

10.1. Title section

| Structured Short Title | : | Service life - workers, Intumescent coatings - Professional |
|------------------------|---|--|
| | | Workers; Fabrics, textiles and apparel: Large surface area articles (AC5a).; Metal articles: Large surface area articles (AC7a).; Plastic articles (AC13). |

| Environm | ient | |
|----------|--|-------------------|
| CS1 | Intumescent coatings - Professional Workers | ERC10a, ERC11a |
| Worker | | |
| CS2 | Low energy manipulation and handling of substances bound in/on materials and/or articles | PROC21 |

10.2. Conditions of use affecting exposure

10.2.1. Control of environmental exposure: Widespread use of articles with low release (outdoor) (ERC10a) / Widespread use of articles with low release (indoor) (ERC11a)

| Conditions and measures related | to s | ewage treatment plant |
|------------------------------------|------|--|
| STP type | : | Municipal Sewage Treatment Plant |
| Additional information on STP | : | Biological elimination |
| STP sludge treatment | : | Controlled application of sewage sludge to agricultural soil |
| STP effluent | : | 2.000 m³/d |
| Other conditions affecting enviror | nme | ntal exposure |
| Receiving surface water flow | : | 18.000 m³/d |
| Local freshwater dilution factor | | 10 |



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10.2.2. Control of worker exposure:Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

| Product (article) characteristics | |
|------------------------------------|--|
| Covers percentage substance in the | he product up to 100 %. |
| Physical form of product | : Solid, medium dustiness |
| Amount used, frequency and du | ration of use (or from service life) |
| Duration | : Covers daily exposures up to 8 hours |
| Other conditions affecting work | ers exposure |
| Indoor or outdoor use | : Indoor use |
| Temperature | : 40 °C |

10.3. Exposure estimation and reference to its source

10.3.1. Environmental release and exposure: Widespread use of articles with low release (outdoor) (ERC10a) / Widespread use of articles with low release (indoor) (ERC11a)

| Release route | Release rate | Release estimation method |
|---------------|--------------|---------------------------|
| Water | 0 kg/day | Estimated release factor |
| Air | 0 kg/day | Estimated release factor |
| Soil | 0 kg/day | Estimated release factor |

| Compartment | Exposure level | RCR |
|---------------------|-------------------------------------|--------|
| Freshwater | 0,00059 mg/L (EUSES) | < 0,01 |
| Freshwater sediment | 0,015 mg/kg dry weight (EUSES) | < 0,01 |
| Marine water | 0,00006 mg/L (EUSES) | < 0,01 |
| Marine sediment | 0,00145 mg/kg dry weight (EUSES) | < 0,01 |



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| Sewage treatment plant | 0 mg/L (EUSES) | < 0,01 |
|----------------------------------|-------------------------------------|--------|
| Agricultural soil | 0,00066 mg/kg dry weight (EUSES) | < 0,01 |
| Man via environment - Inhalation | 0 mg/m³ (EUSES) | < 0,01 |
| Man via environment - Oral | 0,00002 mg/kg bw/day (EUSES) | < 0,01 |
| combined routes | | < 0,01 |

10.3.2. Worker exposure: Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|---|-------|---------|
| inhalative | systemic | long-term | 5 mg/m ³ (ECETOC TRA worker v3) | 0,602 | |
| inhalative | systemic | short-term | 20 mg/m ³ (ECETOC TRA worker v3) | 0,243 | |
| dermal | systemic | long-term | 2,83 mg/kg bw/day (ECETOC TRA worker v3) | 0,24 | |
| combined routes | systemic | long-term | | 0,842 | |

10.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

Additional information available from:

https://lat-web-prod-storage-

cdn.azureedge.net/nitrogenblob/storage/local/unMlcCNEco1jAEuzdf0ibZWRKBU7y19BBhYUxt7f.pdf



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ES11: PU foams - Consumers

11.1. Title section

| Structured Short Title | : Service life - consumers, PU foams - Consumers; Plastic |
|------------------------|---|
| | articles (AC13). |

| Environm | ent | |
|----------|----------------------|-------------------|
| CS1 | PU foams - Consumers | ERC10a, ERC11a |
| Consume | r | |
| CS2 | Plastic articles | AC13 |

11.2. Conditions of use affecting exposure

11.2.1. Control of environmental exposure: Widespread use of articles with low release (outdoor) (ERC10a) / Widespread use of articles with low release (indoor) (ERC11a)

| STP type | : | Municipal Sewage Treatment Plant |
|-----------------------------------|------|--|
| Additional information on STP | : | Biological elimination |
| STP sludge treatment | : | Controlled application of sewage sludge to agricultural soil |
| | | 2.000 m³/d |
| STP effluent | • | 2.000 1190 |
| Other conditions affecting enviro | onme | |
| | onme | ntal exposure |

11.2.2. Control of consumer exposure: Plastic articles (AC13)

Product (article) characteristics



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| Covers concentrations up to 30 % | | | |
|---|-----------------|--|--|
| Physical form of product | : Solid | | |
| Other conditions affecting consumers exposure | | | |
| Other conditions affecting cor | sumers exposure | | |

11.3. Exposure estimation and reference to its source

11.3.1. Environmental release and exposure: Widespread use of articles with low release (outdoor) (ERC10a) / Widespread use of articles with low release (indoor) (ERC11a)

| Release route | Release rate Release estimation meth | |
|---------------|--------------------------------------|--------------------------|
| Water | 0 kg/day | Estimated release factor |
| Air | 0 kg/day | Estimated release factor |
| Soil | 0 kg/day | Estimated release factor |

| Compartment | Exposure level | RCR |
|----------------------------------|-------------------------------------|--------|
| Freshwater | 0,00059 mg/L (EUSES) | < 0,01 |
| Freshwater sediment | 0,015 mg/kg dry weight (EUSES) | < 0,01 |
| Marine water | 0,00006 mg/L (EUSES) | < 0,01 |
| Marine sediment | 0,00145 mg/kg dry weight (EUSES) | < 0,01 |
| Sewage treatment plant | 0 mg/L (EUSES) | < 0,01 |
| Agricultural soil | 0,00066 mg/kg dry weight (EUSES) | < 0,01 |
| Man via environment - Inhalation | 0 mg/m³ (EUSES) | < 0,01 |
| Man via environment - Oral | 0,00002 mg/kg bw/day (EUSES) | < 0,01 |
| combined routes | | < 0,01 |



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11.3.2. Consumer exposure: Plastic articles (AC13)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|------------------------|--------------------|---|--------|------------|
| inhalative | systemic | long-term | < 0,01 mg/m ³ (measured data) | < 0,01 | |
| dermal | systemic for babies | long-term | 0,148 mg/kg bw/day (measured data) | 0,035 | for babies |
| dermal | systemic for adults | long-term | 0,064 mg/kg bw/day (measured data) | 0,015 | for adults |
| oral | systemic | long-term | < 0,01 mg/kg bw/day (measured data) | < 0,01 | |
| combined routes | systemic for babies | long-term | | 0,035 | for babies |
| combined routes | systemic for adults | long-term | | 0,015 | for adults |

Additional information on exposure estimation

Inhalation exposure is considered to be not relevant. Oral exposure is considered to be not relevant.

11.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

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ES12: Intumescent coatings - Consumers

12.1. Title section

| Plastic articles (AC13). | Structured Short Title | Service life - consumers, Intumescent coatings - Consumers; Plastic articles (AC13). |
|--------------------------|------------------------|--|
|--------------------------|------------------------|--|

| Environment | | | | | | |
|-------------|----------------------------------|-------------------|--|--|--|--|
| CS1 | Intumescent coatings - Consumers | ERC10a, ERC11a | | | | |
| Consume | Consumer | | | | | |
| CS2 | Plastic articles | AC13 | | | | |

12.2. Conditions of use affecting exposure

12.2.1. Control of environmental exposure: Widespread use of articles with low release (outdoor) (ERC10a) / Widespread use of articles with low release (indoor) (ERC11a)

| STP type | : | Municipal Sewage Treatment Plant |
|------------------------------------|-----|--|
| Additional information on STP | : | Biological elimination |
| STP sludge treatment | : | Controlled application of sewage sludge to agricultural soil |
| STP effluent | | 2.000 m³/d |
| STP ellident | • | 2.000 m/u |
| Other conditions affecting environ | nme | |
| | | |

12.2.2. Control of consumer exposure: Plastic articles (AC13)

Product (article) characteristics



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| Covers concentrations up to 30 | 6 | | |
|---|-----------------|--|--|
| Physical form of product | : Solid | | |
| Other conditions affecting consumers exposure | | | |
| Other conditions affecting cor | sumers exposure | | |

12.3. Exposure estimation and reference to its source

12.3.1. Environmental release and exposure: Widespread use of articles with low release (outdoor) (ERC10a) / Widespread use of articles with low release (indoor) (ERC11a)

| Release route | Release rate Release estimation meth | |
|---------------|--------------------------------------|--------------------------|
| Water | 0 kg/day | Estimated release factor |
| Air | 0 kg/day | Estimated release factor |
| Soil | 0 kg/day | Estimated release factor |

| Compartment | Exposure level | RCR |
|----------------------------------|-------------------------------------|--------|
| Freshwater | 0,00059 mg/L (EUSES) | < 0,01 |
| Freshwater sediment | 0,015 mg/kg dry weight (EUSES) | < 0,01 |
| Marine water | 0,00006 mg/L (EUSES) | < 0,01 |
| Marine sediment | 0,00145 mg/kg dry weight (EUSES) | < 0,01 |
| Sewage treatment plant | 0 mg/L (EUSES) | < 0,01 |
| Agricultural soil | 0,00066 mg/kg dry weight (EUSES) | < 0,01 |
| Man via environment - Inhalation | 0 mg/m³ (EUSES) | < 0,01 |
| Man via environment - Oral | 0,00002 mg/kg bw/day (EUSES) | < 0,01 |
| combined routes | | < 0,01 |



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12.3.2. Consumer exposure: Plastic articles (AC13)

| Exposure route | Health effect | Exposure indicator | Exposure level | RCR | Remarks |
|-----------------|---------------|-----------------------|----------------|--------|---------|
| inhalative | systemic | long-term | 0 mg/m³ | < 0,01 | |
| dermal | systemic | long-term | 0 mg/kg bw/day | < 0,01 | |
| oral | systemic | long-term | 0 mg/kg bw/day | < 0,01 | |
| combined routes | systemic | long-term | | < 0,01 | |

Additional information on exposure estimation

Inhalation exposure is considered to be not relevant. Oral exposure is considered to be not relevant. Dermal exposure is considered to be not relevant.

12.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The safety data sheet at hand provides the user with risk management measures and operational conditions which enables him to work safely with the substance / mixture. If other risk management measures / operational conditions are adopted, the user has to ensure, that the risks are managed to at least equivalent levels.

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