# Melamine

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2020/878

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product identifier

| | |
|---|---|
| Product Name | Melamine |
| Chemical Name | 1,3,5-triazine-2,4,6-triamine |
| Chemical Formula | $C_3H_6N_6$ |
| CAS No. | 108-78-1 |
| EC No. | 203-615-4 |
| REACH Registration No. | 01-2119485947-16-0017 |

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

Identified Use(s): Melamine ($C_3H_6N_6$) is a product in form of white powder used for the production of a wide range of synthetic resins.

- Formulation or re-packing
- Use as intermediate for resins (reacted melamine)
- Use as additive in foams
- Use as additive in intumescent coatings
- PU foams - Workers (industrial)
- Intumescent coatings - Workers (industrial)
- Intumescent coatings - Professional Workers

Uses Advised Against: Addition to food or feed products.

### 1.3 Details of the supplier of the safety data sheet

| | |
|---|---|
| Company Identification | Qatar Melamine Co |
| Address | P.O. Box 50001, Mesaieed,<br>Qatar. |
| Telephone | (+974) 44228888 |
| E-mail | aawad@qafco.com.qa |

Only representative of a non-Community manufacturer

| | |
|---|---|
| Company Identification | MUNTAJAT B.V. |
| Address | Prinses Margrietplantsoen 78-A<br>2595 BR, La Haye<br>Pays Bas |
| Telephone | +31(0)70 219 7000 |
| E-mail | REACH@muntajatbv.com |
| Website | www.muntajatbv.com |

### 1.4 Emergency telephone number

| | |
|---|---|
| For Spill, Leak, Fire, Exposure or Accident, Call CHEMTREC Day or Night | Within USA and Canada: 1-800-424-9300<br>Outside USA and Canada: +1 703-741-5970 and +1-703-527-3887 (collect calls accepted) |

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008 (CLP):
Carc. 2 :Suspected of causing cancer.
Repr. 2 :Suspected of damaging fertility. (Testes, Sperm)
STOT RE 2 : May cause damage to organs through prolonged or repeated exposure: Urinary tract.

### 2.2 Label elements

According to Regulation (EC) No. 1272/2008 (CLP)

Product Name: Melamine

Hazard Pictogram(s):

GHS08

Signal Word(s): Warning

Hazard Statement(s):
H351: Suspected of causing cancer.
H361f: Suspected of damaging fertility. (Testes, Sperm)
H373: May cause damage to organs through prolonged or repeated exposure: Urinary tract.

| | |
|---|---|
| Precautionary Statement(s) | P201: Obtain special instructions before use.<br>P202: Do not handle until all safety precautions have been read and understood.<br>P260: Do not breathe dust.<br>P280: Wear protective gloves/protective clothing/eye protection/face protection.<br>P308+P313: IF exposed or concerned: Get medical advice/attention.<br>P501: Dispose of contents in accordance with local, state or national legislation. |

**2.3 Other hazards**

May be harmful if swallowed.
Dust may have irritant effect on skin, eyes and air passages.

**2.4 Additional Information**

For full text of H/P Statements see section 16.

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Substances**

| HAZARDOUS INGREDIENT(S) | CAS No. | EC No. / REACH Registration No. | %W/W | Hazard Statement(s) | Hazard Pictogram(s) |
|---|---|---|---|---|---|
| Melamine | 108-78-1 | 203-615-4<br>01-2119485947-16-0017 | 80-100 | Carc. 2 H351<br>Repr. 2 H361f<br>STOT RE 2 H373 | GHS08 |

Contains no non-classified vPvB substances or substances with a Union workplace exposure limit.
For full text of H/P Statements see section 16.

**3.2 Mixtures**

Not applicable.

## SECTION 4: FIRST AID MEASURES

**4.1 Description of first aid measures**

| | |
|---|---|
| Inhalation | If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, obtain medical attention. |
| Skin Contact | After contact with skin, wash immediately with plenty of soap and water. |
| Eye Contact | First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor. |
| Ingestion | If swallowed, rinse mouth with water (only if the person is conscious). Get medical advice/attention if you feel unwell. |

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

Dust may have irritant effect on skin, eyes and air passages.

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

IF exposed or concerned: Get medical advice/attention.

## SECTION 5: FIREFIGHTING MEASURES

**5.1 Extinguishing media**

| | |
|---|---|
| Suitable Extinguishing media | Extinguish with carbon dioxide, dry chemical, foam or waterspray. |
| Unsuitable extinguishing media | Water with full jet. |

**5.2 Special hazards arising from the substance or mixture**

Decomposes in a fire giving off toxic fumes: Carbon monoxide, Carbon dioxide, Oxides of nitrogen. Ammonia is released when melamine is heated above 500°C.

**5.3 Advice for firefighters**

Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**6.1 Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation. Ensure suitable personal protection (including respiratory protection) during removal of spillages. Avoid generation of dust. Do

not breathe dust.

**6.2 Environmental precautions**

Do not allow to enter drains, sewers or watercourses.

**6.3 Methods and material for containment and cleaning up**

Sweep spilled substances into containers if appropriate moisten first to prevent dusting. Carefully collect remainder. Do not wash spillage with water as area will be slippery and will block sewage.

**6.4 Reference to other sections**

See Also Section 8, 13.

## SECTION 7: HANDLING AND STORAGE

**7.1 Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Provide adequate ventilation. Avoid generation of dust. Do not breathe dust. Wear protective gloves/protective clothing/eye protection/face protection. Wash hands and exposed skin thoroughly after handling.

**7.2 Conditions for safe storage, including any incompatibilities**

Keep from direct sunlight. Store locked up. Store in dry place. Keep container tightly closed.

| | |
|---|---|
| Storage temperature | Ambient. |
| Storage life | Stable under normal conditions. |
| Incompatible materials | Strongly acidic, Strong oxidising agents. |

**7.3 Specific end use(s)**

- Formulation or re-packing
- Use as intermediate for resins (reacted melamine)
- Use as additive in foams
- Use as additive in intumescent coatings
- PU foams - Workers (industrial)
- Intumescent coatings - Workers (industrial)
- Intumescent coatings - Professional Workers

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**8.1 Control parameters**

8.1.1 Occupational Exposure Limits

| SUBSTANCE | CAS No. | LTEL (8 hr TWA ppm) | LTEL (8 hr TWA mg/m³) | STEL (ppm) | STEL (mg/m³) | Note |
|---|---|---|---|---|---|---|
| Melamine | 108-78-1 | | | | | None assigned |

Source: UK Workplace Exposure Limits EH40/2005 (Fourth edition, published 2020), United Kingdom

8.1.2 PNECs and DNELs

| DNEL / DMEL | Oral | Inhalation | Dermal |
|---|---|---|---|
| Industry - Long Term - Local effects | | | |
| Industry - Long Term - Systemic effects | | 8.3 mg/m³ | 11.8 mg/kg bw/day |
| Industry - Short term - Local effects | | | |
| Industry - Short term - Systemic effects | | 82.3 mg/m³ | |
| Consumer - Long Term - Local effects | | | |
| Consumer - Long Term - Systemic effects | 0.42 mg/kg bw/day | 1.5 mg/m³ | 4.2 mg/kg bw/day |
| Consumer - Short term - Local effects | | | |
| Consumer - Short term - Systemic effects | | | |

| Environment | PNEC |
|---|---|
| Aquatic Compartment (including sediment) | Fresh water: 0.51 mg/l<br>Intermittent release: 2 mg/l<br>Sea water: 0.051 mg/l<br>Fresh water (Sediment): 13.06 mg/kg dw<br>Sea water (Sediment): 1.306 mg/kg dw |
| Terrestrial Compartment | Sewage Treatment Plant: 100 mg/l |
| Atmospheric Compartment | Soil: 2.312 mg/kg dw |

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**8.2 Exposure controls**

8.2.1. Appropriate engineering controls: Ensure adequate ventilation.

8.2.2. Personal protection equipment

Eye Protection: Wear protective eyewear (goggles, face shield, or safety glasses).

Skin protection: Wear protective gloves.
Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Respiratory protection: An approved dust mask should be worn if dust is generated during handling.

Thermal hazards: Not applicable.

8.2.3. Environmental Exposure Controls: Do not allow to enter drains, sewers or watercourses.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on basic physical and chemical properties**

| | |
|---|---|
| Physical state | Powder. |
| Colour | White. |
| Odour | Odourless. |
| Melting point/freezing point | 361°C @ 101.3 kPa |
| Boiling point or initial boiling point and boiling range | >361°C (Sublimation) |
| Flammability | Non-flammable. |
| Lower and upper explosion limit | Not known. |
| Flash Point | Not applicable. |
| Auto-ignition temperature | >400°C |
| Decomposition Temperature | >361°C |
| pH | 7.5 - 8.0 (aqueous solution) |
| Kinematic Viscosity | Not applicable. |
| Solubility | Solubility (Water) : Slightly soluble: 3.48 g/l @ 20°C<br>Solubility (Other): Very slightly soluble: Acetone (0.3 g/l), Ethanol (0.6 g/l), Dimethylformamide (0.1 g/l), Soluble: Ethyl cellosolve (11.2 g/l) @ 30°C |
| Partition coefficient n-octanol/water (log value) | -1.22 @ 20°C |
| Vapour pressure | 1.0E-8 Pa @ 20°C |
| Density and/or relative density | Density (g/ml): 1570 kg/m³, Relative density: 1.57 @ 20°C |
| Relative vapour density | Not applicable. |
| Particle characteristics | Fine powder with mass median diameter: <100 µm |

**9.2 Other information**

| | |
|---|---|
| Dissociation constant | 6.7 pKa @ 20°C |
| Molecular weight | 126.12 g/mol |
| Explosive properties | Not explosive. |
| Oxidising properties | Not oxidising. |

## SECTION 10: STABILITY AND REACTIVITY

**10.1 Reactivity**

Stable under normal conditions.

**10.2 Chemical Stability**

Stable under normal conditions.

**10.3 Possibility of hazardous reactions**

No hazardous reactions known if used for its intended purpose.

**10.4 Conditions to avoid**

Keep away from moisture.

**10.5 Incompatible materials**

Strongly acidic, Strong oxidising agents.

**10.6 Hazardous decomposition products**

No hazardous decomposition products known.

## SECTION 11: TOXICOLOGICAL INFORMATION

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

| | |
|---|---|
| Acute toxicity - Ingestion | May be harmful if swallowed.<br>LD50 (rat): 3161 mg/kg |
| Acute toxicity - Skin Contact | Not classified.<br>Low acute toxicity. LD50 (rat): >2000 mg/kg |
| Acute toxicity - Inhalation | Not classified.<br>Low acute toxicity. LC50 (rat): >5190 mg/m³ |
| Skin corrosion/irritation | Not classified.<br>Non-irritant. |
| Serious eye damage/irritation | Not classified.<br>Unlikely to cause eye irritation. |
| Skin sensitization data | Not classified.<br>It is not a skin sensitiser in animal tests.<br>Sensitisation (guinea pig) - Negative |
| Respiratory sensitization data | Not classified. |
| Germ cell mutagenicity | Not classified.<br>There is no evidence of mutagenic potential.<br>Many mutagenicity tests, covering various endpoints of mutagenicity/genotoxicity, were performed with melamine. The predominant result is negative. |
| Carcinogenicity | Suspected of causing cancer.<br>LOAEL (oral) (rat): 126 mg/kg bw/day (Chronic, Bladder).<br>Statistically significant increases in the incidence of transitional-cell carcinoma and combined incidences of transitional-cell carcinoma and papilloma in the urinary bladder were observed in male rats exposed to 4500 ppm melamine (ca. 263 mg/kg bw/day), but not when exposed to 2250 ppm melamine. With one exception, urinary bladder stones were observed in male rats that had transitional-cell carcinomas. Female rats did not develop tumours even when exposed up to 9000 ppm. No neoplastic findings related to treatment were observed in male or female mice. |
| Reproductive toxicity | Suspected of damaging fertility in male rats. (Testes, Sperm)<br>NOAEL (oral): 89 mg/kg bw/day (Sub-chronic, 168 hours/week rat).<br>Adverse effects on the male reproductive system were detected in an EOGRTS performed according to OECD TG 443 in rats, following the ECHA decision number TPE-D-2114373433-50-01. Tubular degeneration/atrophy in the testis was observed with related minimal cellular debris in the epididymis in F0 and F1 males. In addition, an increase in sperm abnormalities (detached heads) was observed in the F0 and F1 males. |
| Lactation | Not classified. |
| STOT - single exposure | None anticipated. |
| STOT - repeated exposure | May cause damage to organs through prolonged or repeated exposure: Urinary tract.<br>NOAEL (oral) (rat): 72 mg/kg bw/day (Sub-chronic, Bladder, Kidneys)<br>When tested in oral repeated dose toxicity studies in rats, melamine caused formation of urinary calculi in the bladder and hyperplasia in the bladder epithelium of both sexes. The effects were dose-related, with the male rats being more sensitive than females to the effects in the bladder.<br>Mice were also investigated: The incidence of bladder stones was dose related as in rats, being greater in males than in females, but starting at much higher doses than in rats. |
| Aspiration hazard | Not classified. |

**11.2 Information on other hazards**

Dust may have irritant effect on skin, eyes and air passages.

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## SECTION 12: ECOLOGICAL INFORMATION

**12.1 Toxicity**

| | |
|---|---|
| | Low toxicity to aquatic organisms. |
| Acute | LC50 (Rainbow trout): >3000 mg/l |
| | LC50 (Daphnia magna): 200 mg/l |
| Chronic | NOEC (Fathead minnow (Pimephales promelas)): ≥ 5.1 mg/l |
| | NOEC (Daphnia magna): ≥ 11 mg/l |
| Algae | EC50 Fresh water: 325 mg/l |
| | NOEC Fresh water: 98 mg/l |

**12.2 Persistence and degradability**

This substance is not readily biodegradable. Not expected to be inherently biodegradable.

**12.3 Bioaccumulative potential**

The substance has no potential for bioaccumulation.
Bioconcentration factor (BCF): 3.8 L/kg ww

**12.4 Mobility in soil**

The substance is predicted to have moderate mobility in soil.

**12.5 Results of PBT and vPvB assessment**

Not classified as PBT or vPvB.

**12.6 Endocrine disrupting properties**

Does not cause endocrine disruption.

**12.7 Other adverse effects**

None anticipated.

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1 Waste treatment methods**

Dispose of empty containers and wastes safely. Recover or recycle if possible.

**13.2 Additional Information**

Disposal should be in accordance with local, state or national legislation.

## SECTION 14: TRANSPORT INFORMATION

**Not classified as hazardous for transport.**

**14.1 UN number or ID number**

Not applicable

**14.2 UN proper shipping name**

Not applicable

**14.3 Transport hazard class(es)**

Not applicable

**14.4 Packing group**

Not applicable

**14.5 Environmental hazards**

Not classified as a Marine Pollutant.

**14.6 Special precautions for user**

Not known

**14.7 Maritime transport in bulk according to IMO instruments**

Not known

## SECTION 15: REGULATORY INFORMATION

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

European Regulations - Authorisations and/or Restrictions On Use

| | |
|---|---|
| Candidate List of Substances of Very High Concern for Authorisation | Melamine (108-78-1) |
| REACH: Annex XIV list of substances subject to authorisation | Not listed |
| REACH: Annex XVII Restrictions on the manufacture, placing on the market and use of certain dangerous substances, | Not listed |

mixtures and articles

| | |
|---|---|
| Community Rolling Action Plan (CoRAP) | Not listed |
| Regulation (EU) N° 2019/1021 of the European Parliament and of the Council on persistent organic pollutants | Not listed |
| Regulation (EC) N° 1005/2009 on substances that deplete the ozone layer | Not listed |
| Regulation (EU) N° 649/2012 of the European Parliament and of the Council concerning the export and import of hazardous chemicals | Not listed |

**National regulations**

| | |
|---|---|
| Inventory Status | Listed in: Australia, Canada (DSL), China, Japan, Korea, Taiwan, New Zealand (HSNO) – HSNO Approval: HSR002503, New Zealand (NZIoC), Philippines. |

**15.2 Chemical Safety Assessment**

A REACH chemical safety assessment has been carried out.

## SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1-16

**LEGEND**

Hazard Pictogram(s)

GHS08

| | |
|---|---|
| Hazard classification | Carc. 2 : Carcinogenicity, Category 2<br>Repr. 2 : Reproductive toxicity, Category 2<br>STOT RE 2 : Specific target organ toxicity — repeated exposure, Category 2 |
| Hazard Statement(s) | H351: Suspected of causing cancer.<br>H361f: Suspected of damaging fertility.<br>H373: May cause damage to organs through prolonged or repeated exposure. |
| Precautionary Statement(s) | P201: Obtain special instructions before use.<br>P202: Do not handle until all safety precautions have been read and understood.<br>P260: Do not breathe dust.<br>P280: Wear protective gloves/protective clothing/eye protection/face protection.<br>P308+P313: IF exposed or concerned: Get medical advice/attention.<br>P314: Get medical advice/attention if you feel unwell.<br>P405: Store locked up.<br>P501: Dispose of contents in accordance with local, state or national legislation. |
| Acronyms | CAS : Chemical Abstracts Service<br>CLP : Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures<br>DNEL : Derived No Effect Level<br>EC : European Community<br>LTEL : Long term exposure limit<br>PBT : Persistent, Bioaccumulative and Toxic<br>PNEC : Predicted No Effect Concentration<br>REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals<br>STEL : Short term exposure limit<br>STOT : Specific Target Organ Toxicity<br>vPvB : very Persistent and very Bioaccumulative |

Key literature references and sources for data used to compile the SDS: Regulation (EC) No. 1272/2008 (CLP)

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| | |
|---|---|
| Training Advice | Regular safety training as appropriate |
| Disclaimers | Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Qatar Melamine Co gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Qatar Melamine Co accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed. |

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**Exposure Scenario 1**: **Formulation or re-packing - Formulation or re-packaging**

| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
|---|---|---|
| | Formulation or re-packing - Formulation or re-packaging | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Formulation or re-packaging | ERC2 |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Chemical production or refinery in closed process without likelihood of 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 conditions | 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 and discharging) at non-dedicated facilities (Solid) | PROC8a |
| CS7 | Transfer of substance or mixture (charging and 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, pelletisation, granulation | PROC14 |
| CS10 | Use as laboratory reagent (Solid) | PROC15 |
| CS11 | Hand-mixing with intimate contact and only PPE available (Solid) | PROC19 |
| CS12 | Manual maintenance (cleaning and repair) of machinery (Solid) | PROC28 |
| CS13 | Mixing or blending in batch processes (Liquid) | PROC5 |
| CS14 | Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) | PROC8b |
| CS15 | Use as laboratory reagent (Liquid) | PROC15 |
| CS16 | Manual maintenance (cleaning and repair) of machinery (Liquid) | PROC28 |
| CS17 | Hand-mixing with intimate contact and only PPE available (Liquid) | PROC19 |
| CS18 | Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) | PROC8a |

| **SECTION 2:** | **2.0 Conditions of use** |
|---|---|
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Formulation or re-packaging (ERC2) |
| **Amount used, frequency and duration of use (or from service life)** | |
| Daily use amount at site: Not relevant for this material. | |
| Annual use amount at site: Not relevant for this material. | |
| **Conditions and measures related to biological sewage treatment plant** | |
| Biological STP**:** Standard [Effectiveness water: 2.77%] | |
| Discharge rate of STP: >= 2E3 m3/day | |
| Application of the STP sludge on agricultural soil**:** Yes | |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow**:** >= 1.8E4 m3/day | |

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| | |
|---|---|
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC2) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product**:** Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation**:** 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:**<br>2.3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection: No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.4** | **Contributing scenario controlling worker exposure exposure:**<br>2.4 Chemical production where opportunity for exposure arises (PROC4) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |

| | |
|---|---|
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.5** | **Contributing scenario controlling worker exposure exposure:** 2.5 Mixing or blending in batch processes (Solid) (PROC5) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.6** | **Contributing scenario controlling worker exposure exposure:** 2.6 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |

| | |
|---|---|
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use**:** Indoor | |
| **2.7** | **Contributing scenario controlling worker exposure exposure:** 2.7 Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.8** | **Contributing scenario controlling worker exposure exposure:** 2.8 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |

## Melamine

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|---|---|
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.9** | **Contributing scenario controlling worker exposure exposure:** 2.9 Tabletting, compression, extrusion, pelletisation, granulation (PROC14) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.10** | **Contributing scenario controlling worker exposure exposure:** 2.10 Use as laboratory reagent (Solid) (PROC15) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.11** | **Contributing scenario controlling worker exposure exposure:** 2.11 Hand-mixing with intimate contact and only PPE available (Solid) (PROC19) |
| **Product (article) characteristic** | |

| | |
|---|---|
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=4.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 95%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.12** | **Contributing scenario controlling worker exposure exposure:**<br>2.12 Manual maintenance (cleaning and repair) of machinery (Solid) (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.13** | **Contributing scenario controlling worker exposure exposure:**<br>2.13 Mixing or blending in batch processes (Liquid) (PROC5) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |

| | |
|---|---|
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.14** | **Contributing scenario controlling worker exposure exposure:** 2.14 Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.15** | **Contributing scenario controlling worker exposure exposure:** 2.15 Use as laboratory reagent (Liquid) (PROC15) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |

## Melamine

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|---|---|
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.16** | **Contributing scenario controlling worker exposure exposure:**<br>2.16 Manual maintenance (cleaning and repair) of machinery (Liquid) (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.17** | **Contributing scenario controlling worker exposure exposure:**<br>2.17 Hand-mixing with intimate contact and only PPE available (Liquid) (PROC19) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 95%] | |

| | |
|---|---|
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.18** | **Contributing scenario controlling worker exposure exposure:** 2.18 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **SECTION 3:** | **3.0 Exposure estimation** |
| **3.1. Environment** | |
| **Contributing scenario controlling environmental exposure:** Formulation or re-packaging (ERC2) | |

| **Release** | **Release estimation method** | **Explanations** |
|---|---|---|
| Water | Estimated release rate | Local release rate: 5 kg/day |
| Air | Estimated release rate | Local release rate: 1 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 0.248 mg/l | 0.49 |
| Sedimentation (Fresh water) | Local PEC: 6.348 mg/kg dw | 0.49 |
| Marine water | Local PEC: 0.025 mg/l | 0.50 |
| Sedimentation (Marine water) | Local PEC: 0.652 mg/kg dw | 0.50 |
| Sewage Treatment Plant | Local PEC: 2.431 mg/l | 0.02 |
| Agricultural soil | Local PEC: 1.7 mg/kg dw | 0.75 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 2.78E-4 mg/m³ | < 0.01 |
| Man via Environment - Oral | Exposure via food consumption: 0.025 | 0.06 |

| | | |
|---|---|---|
| | mg/kg bw/day | |
| Man via Environment - Combined routes | | 0.06 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC2) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 1.37 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.176 |
| **Contributing scenario controlling worker exposure:** Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 0.69 mg/kg bw/day | 0.058 |
| Combined routes, Systemic effects, Long Term | | 0.179 |
| **Contributing scenario controlling worker exposure:** Chemical production where opportunity for exposure arises (PROC4) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Mixing or blending in batch processes (Solid) (PROC5) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |

| | | |
|---|---|---|
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.353 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Tabletting, compression, extrusion, pelletisation, granulation (PROC14) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 3.43 mg/kg bw/day | 0.291 |
| Combined routes, Systemic effects, Long Term | | 0.411 |
| **Contributing scenario controlling worker exposure:** Use as laboratory reagent (Solid) (PROC15) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 0.34 mg/kg bw/day | 0.029 |
| Combined routes, Systemic effects, Long Term | | 0.089 |
| **Contributing scenario controlling worker exposure:** Hand-mixing with intimate contact and only PPE available (Solid) (PROC19) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 3 mg/m³ | 0.361 |

| | | |
|---|---|---|
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 7.072 mg/kg bw/day | 0.599 |
| Combined routes, Systemic effects, Long Term | | 0.961 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (Solid) (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Mixing or blending in batch processes (Liquid) (PROC5) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.743 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.743 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Use as laboratory reagent (Liquid) (PROC15) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 0.34 mg/kg bw/day | 0.029 |
| Combined routes, Systemic effects, Long Term | | 0.092 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (Liquid) (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |

| | | |
|---|---|---|
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Hand-mixing with intimate contact and only PPE available (Liquid) (PROC19) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1.74 mg/m³ | 0.21 |
| Inhalation, Systemic effects, Acute | 1.74 mg/m³ | 0.021 |
| Dermal, Systemic effects, Long Term | 7.072 mg/kg bw/day | 0.599 |
| Combined routes, Systemic effects, Long Term | | 0.809 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** | |
| **4.1. Health** | | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | | |
| **4.2. Environment** | | |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. | | |

**Exposure Scenario 2**: **Use at industrial sites- Use as monomer (intermediate) for melamine based resins production**

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|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** |
| | Use at industrial sites- Use as monomer (intermediate) for melamine based resins |

| | | |
|---|---|---|
| | production | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Use as monomer (intermediate) for melamine based resins production | ERC6a, ERC6c |
| **Contributing scenario controlling worker exposure** | | |
| 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 conditions | PROC3 |
| 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 and discharging) at non-dedicated facilities (Solid) | PROC8a |
| CS9 | Transfer of substance or mixture (charging and 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, pelletisation, granulation | PROC14 |
| CS12 | Use as laboratory reagent | PROC15 |
| CS13 | Manual maintenance (cleaning and repair) of machinery | PROC28 |
| CS14 | Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) | PROC8a |
| CS15 | Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) | PROC8b |
| CS16 | Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (Liquid) | PROC9 |

| | |
|---|---|
| **SECTION 2:** | **2.0 Conditions of use** |
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Use as monomer (intermediate) for melamine based resins production (ERC6a, ERC6c) |
| **Amount used, frequency and duration of use (or from service life)** | |
| Daily use amount at site: Not relevant for this material. | |
| Annual use amount at site: Not relevant for this material. | |
| **Conditions and measures related to biological sewage treatment plant** | |
| Biological STP**:** Standard [Effectiveness water: 2.77%] | |
| Discharge rate of STP**:** >= 2E3 m3/day | |
| Application of the STP sludge on agricultural soil**:** Yes | |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day | |
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) |

## Melamine

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|---|---|
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection: No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:**<br>2.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.4** | **Contributing scenario controlling worker exposure exposure:**<br>2.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |

| | |
|---|---|
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.5** | **Contributing scenario controlling worker exposure exposure:** 2.5 Chemical production where opportunity for exposure arises (PROC4) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.6** | **Contributing scenario controlling worker exposure exposure:** 2.6 Mixing or blending in batch processes (PROC5) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |

| | |
|---|---|
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.7** | **Contributing scenario controlling worker exposure exposure:** 2.7 Calendering operations (PROC6) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 90%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.8** | **Contributing scenario controlling worker exposure exposure:** 2.8 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |

## Melamine

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| **2.9** | **Contributing scenario controlling worker exposure exposure:** 2.9 Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.10** | **Contributing scenario controlling worker exposure exposure:** 2.10 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (Solid) (PROC9) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.11** | **Contributing scenario controlling worker exposure exposure:** 2.11 Tabletting, compression, extrusion, pelletisation, granulation (PROC14) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |

## Melamine

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| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.12** | **Contributing scenario controlling worker exposure exposure:**<br>2.12 Use as laboratory reagent (PROC15) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.13** | **Contributing scenario controlling worker exposure exposure:**<br>2.13 Manual maintenance (cleaning and repair) of machinery (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |

| | |
|---|---|
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.14** | **Contributing scenario controlling worker exposure exposure:** 2.14 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.15** | **Contributing scenario controlling worker exposure exposure:** 2.15 Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |

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| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.16** | **Contributing scenario controlling worker exposure exposure:** 2.16 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (Liquid) (PROC9) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **SECTION 3:** | **3.0 Exposure estimation** |
| **3.1. Environment** | |
| **Contributing scenario controlling environmental exposure:** Use as monomer (intermediate) for melamine based resins production (ERC6a, ERC6c) | |

| **Release** | **Release estimation method** | **Explanations** |
|---|---|---|
| Water | Estimated release rate | Local release rate: 3 kg/day |
| Air | Estimated release rate | Local release rate: 0.5 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 0.151 mg/l | 0.30 |
| Sedimentation (Fresh water) | Local PEC: 3.86 mg/kg dw | 0.30 |
| Marine water | Local PEC: 0.015 mg/l | 0.29 |
| Sedimentation (Marine water) | Local PEC: 0.396 mg/kg dw | 0.30 |
| Sewage Treatment Plant | Local PEC: 1.458 mg/l | 0.02 |
| Agricultural soil | Local PEC: 1.014 mg/kg dw | 0.44 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.39E-4 mg/m³ | < 0.01 |

| | | |
|---|---|---|
| Man via Environment - Oral | Exposure via food consumption: 0.014 mg/kg bw/day | 0.03 |
| Man via Environment - Combined routes | | 0.03 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.01 mg/m³ | <0.01 |
| Inhalation, Systemic effects, Acute | 0.04 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 0.034 mg/kg bw/day | <0.01 |
| Combined routes, Systemic effects, Long Term | | <0.01 |
| **Contributing scenario controlling worker exposure:** Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 1.37 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.176 |
| **Contributing scenario controlling worker exposure:** Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 0.69 mg/kg bw/day | 0.058 |
| Combined routes, Systemic effects, Long Term | | 0.179 |
| **Contributing scenario controlling worker exposure:** Chemical production where opportunity for exposure arises (PROC4) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Mixing or blending in batch processes (PROC5) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |

| | | |
|---|---|---|
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Calendering operations (PROC6) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.743 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.353 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (Solid) (PROC9) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Tabletting, compression, extrusion, pelletisation, granulation (PROC14) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |

| | | |
|---|---|---|
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 3.43 mg/kg bw/day | 0.291 |
| Combined routes, Systemic effects, Long Term | | 0.411 |
| **Contributing scenario controlling worker exposure:** Use as laboratory reagent (PROC15) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 0.34 mg/kg bw/day | 0.029 |
| Combined routes, Systemic effects, Long Term | | 0.089 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.315 mg/m³ | 0.038 |
| Inhalation, Systemic effects, Acute | 0.315 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 8.226 mg/kg bw/day | 0.697 |
| Combined routes, Systemic effects, Long Term | | 0.735 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.315 mg/m³ | 0.038 |
| Inhalation, Systemic effects, Acute | 0.315 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 8.226 mg/kg bw/day | 0.697 |
| Combined routes, Systemic effects, Long Term | | 0.735 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (Liquid) (PROC9) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.315 mg/m³ | 0.038 |
| Inhalation, Systemic effects, Acute | 0.315 mg/m³ | <0.01 |

| | | |
|---|---|---|
| Dermal, Systemic effects, Long Term | 4.114 mg/kg bw/day | 0.349 |
| Combined routes, Systemic effects, Long Term | | 0.387 |

| | |
|---|---|
| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** |

**4.1. Health**

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**4.2. Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.

**Exposure Scenario 3**: **Use at industrial sites- Use as monomer (intermediate) in melamine based resins before curing**

| | | |
|---|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
| | Use at industrial sites- Use as monomer (intermediate) in melamine based resins before curing | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Use as monomer (intermediate) in melamine based resins before curing | ERC6c |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Industrial spraying | PROC7 |
| CS3 | Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) | PROC8a |
| CS4 | Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) | PROC8b |
| CS5 | Roller application or brushing | PROC10 |
| CS6 | Hand-mixing with intimate contact and only PPE available | PROC19 |
| CS7 | Manual maintenance (cleaning and repair) of machinery | PROC28 |
| CS8 | Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) | PROC8a |
| CS9 | Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) | PROC8b |
| CS10 | Calendering operations | PROC6 |
| **SECTION 2:** | **2.0 Conditions of use** | |
| **2.1** | **Contributing scenario controlling environmental exposure:** 2.1 Use as monomer (intermediate) in melamine based resins before curing (ERC6c) | |
| **Amount used, frequency and duration of use (or from service life)** | | |
| Daily use amount at site: Not relevant for this material. | | |
| Annual use amount at site: Not relevant for this material. | | |
| **Conditions and measures related to biological sewage treatment plant** | | |
| Biological STP**:** Standard [Effectiveness water: 2.77%] | | |

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| Discharge rate of STP**:** >= 2E3 m3/day | |
| Application of the STP sludge on agricultural soil**:** Yes | |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day | |
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Industrial spraying (PROC7) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:**<br>2.3 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |

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| Operating temperature: <= 115 °C | |
| **2.4** | **Contributing scenario controlling worker exposure exposure:** 2.4 Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 120 °C | |
| **2.5** | **Contributing scenario controlling worker exposure exposure:** 2.5 Roller application or brushing (PROC10) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.6** | **Contributing scenario controlling worker exposure exposure:** 2.6 Hand-mixing with intimate contact and only PPE available (PROC19) |

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| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 90%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.7** | **Contributing scenario controlling worker exposure exposure:** 2.7 Manual maintenance (cleaning and repair) of machinery (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: <= 115 °C | |
| **2.8** | **Contributing scenario controlling worker exposure exposure:** 2.8 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Solid (medium dusty form) | |

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|---|---|
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.9** | **Contributing scenario controlling worker exposure exposure:** 2.9 Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.10** | **Contributing scenario controlling worker exposure exposure:** 2.10 Calendering operations (PROC6) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 10 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |

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|---|---|---|
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | | |
| **Other given operational conditions affecting workers exposure** | | |
| Place of use: Indoor | | |
| Operating temperature: <= 115 °C | | |
| **SECTION 3:** | **3.0 Exposure estimation** | |
| **3.1. Environment** | | |
| **Contributing scenario controlling environmental exposure:** Use as monomer (intermediate) in melamine based resins before curing (ERC6c) | | |
| **Release** | **Release estimation method** | **Explanations** |
| Water | Estimated release rate | Local release rate: 0.5 kg/day |
| Air | Estimated release rate | Local release rate: 0 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 0.029 mg/l | 0.06 |
| Sedimentation (Fresh water) | Local PEC: 0.75 mg/kg dw | 0.06 |
| Marine water | Local PEC: 2.98E-3 mg/l | 0.06 |
| Sedimentation (Marine water) | Local PEC: 0.076 mg/kg dw | 0.06 |
| Sewage Treatment Plant | Local PEC: 0.243 mg/l | <0.01 |
| Agricultural soil | Local PEC: 0.164 mg/kg dw | 0.07 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 9.38E-16 mg/m³ | < 0.01 |
| Man via Environment - Oral | Exposure via food consumption: 1.65 E-3 mg/kg bw/day | < 0.01 |
| Man via Environment - Combined routes | | < 0.01 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Industrial spraying (PROC7) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 3.85 mg/m³ | 0.464 |
| Inhalation, Systemic effects, Acute | 3.85 mg/m³ | 0.05 |
| Dermal, Systemic effects, Long Term | 5.143 mg/kg bw/day | 0.436 |
| Combined routes, Systemic effects, Long Term | | 0.9 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |

| | | |
|---|---|---|
| Inhalation, Systemic effects, Long Term | 0.315 mg/m³ | 0.038 |
| Inhalation, Systemic effects, Acute | 0.315 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 8.226 mg/kg bw/day | 0.697 |
| Combined routes, Systemic effects, Long Term | | 0.735 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.38 mg/m³ | 0.046 |
| Inhalation, Systemic effects, Acute | 0.38 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 8.226 mg/kg bw/day | 0.697 |
| Combined routes, Systemic effects, Long Term | | 0.743 |
| **Contributing scenario controlling worker exposure:** Roller application or brushing (PROC10) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1.74 mg/m³ | 0.210 |
| Inhalation, Systemic effects, Acute | 1.74 mg/m³ | 0.021 |
| Dermal, Systemic effects, Long Term | 3.29 mg/kg bw/day | 0.279 |
| Combined routes, Systemic effects, Long Term | | 0.489 |
| **Contributing scenario controlling worker exposure:** Hand-mixing with intimate contact and only PPE available (PROC19) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.84 mg/m³ | 0.101 |
| Inhalation, Systemic effects, Acute | 0.84 mg/m³ | 0.01 |
| Dermal, Systemic effects, Long Term | 8.486 mg/kg bw/day | 0.719 |
| Combined routes, Systemic effects, Long Term | | 0.820 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.315 mg/m³ | 0.038 |
| Inhalation, Systemic effects, Acute | 0.315 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 8.226 mg/kg bw/day | 0.697 |
| Combined routes, Systemic effects, Long Term | | 0.735 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long | 3 mg/m³ | 0.361 |

| | | |
|---|---|---|
| Term | | |
| Inhalation, Systemic effects, Acute | 12 mg/m³ | 0.146 |
| Dermal, Systemic effects, Long Term | 1.645 mg/kg bw/day | 0.139 |
| Combined routes, Systemic effects, Long Term | | 0.500 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.6 mg/m³ | 0.072 |
| Inhalation, Systemic effects, Acute | 2.4 mg/m³ | 0.029 |
| Dermal, Systemic effects, Long Term | 8.226 mg/kg bw/day | 0.697 |
| Combined routes, Systemic effects, Long Term | | 0.769 |
| **Contributing scenario controlling worker exposure:** Calendering operations (PROC6) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.315 mg/m³ | 0.038 |
| Inhalation, Systemic effects, Acute | 0.315 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 3.291 mg/kg bw/day | 0.279 |
| Combined routes, Systemic effects, Long Term | | 0.317 |

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| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** |
| **4.1. Health** | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | |
| **4.2. Environment** | |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. | |

**Exposure Scenario 4**: **Use at industrial sites - Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine)**

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|---|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
| | Use at industrial sites - Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine) | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine) | ERC6a |
| **Contributing scenario controlling worker exposure** | | |

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|---|---|---|
| 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 conditions | 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 and discharging) at non-dedicated facilities | PROC8a |
| CS8 | Transfer of substance or mixture (charging and 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 |

| **SECTION 2:** | **2.0 Conditions of use** |
|---|---|
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine) (ERC6a) |

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| **Amount used, frequency and duration of use (or from service life)** |
| Daily use amount at site: Not relevant for this material. |
| Annual use amount at site: Not relevant for this material. |
| **Conditions and measures related to biological sewage treatment plant** |
| Biological STP**:** Standard [Effectiveness water: 2.77%] |
| Discharge rate of STP**:** >= 2E3 m3/day |
| Application of the STP sludge on agricultural soil**:** Yes |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day |

| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) |
|---|---|

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|---|
| **Product (article) characteristic** |
| Percentage (w/w) of substance in mixture/article: <= 100 % |
| Physical form of the used product: Solid (medium dusty form) |
| **Amount used, frequency and duration of use (or from service life)** |
| Duration of activity: <=8.0 h/day |
| **Technical conditions and measures to control dispersion from source towards the worker** |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) |
| Occupational Health and Safety Management System: Advanced |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] |
| **Conditions and measures related to personal protection, hygiene and health evaluation** |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) |

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| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:**<br>2.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.4** | **Contributing scenario controlling worker exposure exposure:**<br>2.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.5** | **Contributing scenario controlling worker exposure exposure:** |

| | |
|---|---|
| | 2.5 Chemical production where opportunity for exposure arises (PROC4) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.6** | **Contributing scenario controlling worker exposure exposure:**<br>2.6 Mixing or blending in batch processes (PROC5) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.7** | **Contributing scenario controlling worker exposure exposure:**<br>2.7 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |

| | |
|---|---|
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.8** | **Contributing scenario controlling worker exposure exposure:** 2.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.9** | **Contributing scenario controlling worker exposure exposure:** 2.9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |

## Melamine

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|---|---|
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.10** | **Contributing scenario controlling worker exposure exposure:** 2.10 Use as laboratory reagent (PROC15) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.11** | **Contributing scenario controlling worker exposure exposure:** 2.11 Manual maintenance (cleaning and repair) of machinery (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |

## Melamine

| **Other given operational conditions affecting workers exposure** | | |
|---|---|---|
| Place of use: Indoor | | |
| **SECTION 3:** | **3.0 Exposure estimation** | |
| **3.1. Environment** | | |
| **Contributing scenario controlling environmental exposure:** Use as intermediate for the production of other substances e.g. melamine salt (reacted melamine) (ERC6a) | | |
| **Release** | **Release estimation method** | **Explanations** |
| Water | Estimated release rate | Local release rate: 3 kg/day |
| Air | Estimated release rate | Local release rate: 0.5 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 0.151 mg/l | 0.30 |
| Sedimentation (Fresh water) | Local PEC: 3.86 mg/kg dw | 0.30 |
| Marine water | Local PEC: 0.015 mg/l | 0.29 |
| Sedimentation (Marine water) | Local PEC: 0.396 mg/kg dw | 0.30 |
| Sewage Treatment Plant | Local PEC: 1.458 mg/l | 0.02 |
| Agricultural soil | Local PEC: 1.014 mg/kg dw | 0.44 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.39E-4 mg/m³ | < 0.01 |
| Man via Environment - Oral | Exposure via food consumption: 0.014 mg/kg bw/day | 0.03 |
| Man via Environment - Combined routes | | 0.03 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.01 mg/m³ | <0.01 |
| Inhalation, Systemic effects, Acute | 0.04 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 0.034 mg/kg bw/day | <0.01 |
| Combined routes, Systemic effects, Long Term | | <0.01 |
| **Contributing scenario controlling worker exposure:** Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 1.37 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.176 |

## Melamine

| **Contributing scenario controlling worker exposure:** Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) | | |
|---|---|---|
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 0.69 mg/kg bw/day | 0.058 |
| Combined routes, Systemic effects, Long Term | | 0.179 |
| **Contributing scenario controlling worker exposure:** Chemical production where opportunity for exposure arises (PROC4) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Mixing or blending in batch processes (PROC5) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.353 |

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| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) | | |
|---|---|---|
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Use as laboratory reagent (PROC15) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 0.34 mg/kg bw/day | 0.029 |
| Combined routes, Systemic effects, Long Term | | 0.089 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |

| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** |
|---|---|

**4.1. Health**

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

**4.2. Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required.

**Exposure Scenario 5: Use at industrial sites - Use as additive in foams**

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|---|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
| | Use at industrial sites - Use as additive in foams | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Use as additive in foams | ERC5 |
| **Contributing scenario controlling worker exposure** | | |
| 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 conditions | 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 and discharging) at non-dedicated facilities | PROC8a |
| CS8 | Transfer of substance or mixture (charging and 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 | Hand-mixing with intimate contact and only PPE available | PROC19 |
| CS12 | Manual maintenance (cleaning and repair) of machinery | PROC28 |

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|---|---|
| **SECTION 2:** | **2.0 Conditions of use** |
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Use as additive in foams (ERC5) |
| **Amount used, frequency and duration of use (or from service life)** | |
| Daily use amount at site: Not relevant for this material. | |
| Annual use amount at site: Not relevant for this material. | |
| **Conditions and measures related to biological sewage treatment plant** | |
| Biological STP**:** Standard [Effectiveness water: 2.77%] | |
| Discharge rate of STP**:** >= 2E3 m3/day | |
| Application of the STP sludge on agricultural soil**:** Yes | |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day | |
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |

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| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:**<br>2.3 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.4** | **Contributing scenario controlling worker exposure exposure:**<br>2.4 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |

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| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.5** | **Contributing scenario controlling worker exposure exposure:** 2.5 Chemical production where opportunity for exposure arises (PROC4) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.6** | **Contributing scenario controlling worker exposure exposure:** 2.6 Mixing or blending in batch processes (PROC5) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |

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| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.7** | **Contributing scenario controlling worker exposure exposure:** 2.7 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.8** | **Contributing scenario controlling worker exposure exposure:** 2.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.9** | **Contributing scenario controlling worker exposure exposure:** 2.9 Transfer of substance or mixture into small containers (dedicated filling line, |

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|---|---|
| | including weighing) (PROC9) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.10** | **Contributing scenario controlling worker exposure exposure:**<br>2.10 Use as laboratory reagent (PROC15) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.11** | **Contributing scenario controlling worker exposure exposure:**<br>2.11 Hand-mixing with intimate contact and only PPE available (PROC19) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |

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| Duration of activity: <=4.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 95%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.12** | **Contributing scenario controlling worker exposure exposure:** 2.12 Manual maintenance (cleaning and repair) of machinery (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **SECTION 3:** | **3.0 Exposure estimation** |
| **3.1. Environment** | |
| **Contributing scenario controlling environmental exposure:** Use as additive in foams (ERC5) | |

| **Release** | **Release estimation method** | **Explanations** |
|---|---|---|
| Water | Estimated release rate | Local release rate: 3 kg/day |
| Air | Estimated release rate | Local release rate: 0.5 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 0.151 mg/l | 0.30 |
| Sedimentation (Fresh water) | Local PEC: 3.86 mg/kg dw | 0.30 |
| Marine water | Local PEC: 0.015 mg/l | 0.29 |

| | | |
|---|---|---|
| Sedimentation (Marine water) | Local PEC: 0.396 mg/kg dw | 0.30 |
| Sewage Treatment Plant | Local PEC: 1.458 mg/l | 0.02 |
| Agricultural soil | Local PEC: 1.014 mg/kg dw | 0.44 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.39E-4 mg/m³ | < 0.01 |
| Man via Environment - Oral | Exposure via food consumption: 0.014 mg/kg bw/day | 0.03 |
| Man via Environment - Combined routes | | 0.03 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.01 mg/m³ | <0.01 |
| Inhalation, Systemic effects, Acute | 0.04 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 0.034 mg/kg bw/day | <0.01 |
| Combined routes, Systemic effects, Long Term | | <0.01 |
| **Contributing scenario controlling worker exposure:** Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 1.37 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.176 |
| **Contributing scenario controlling worker exposure:** Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 0.69 mg/kg bw/day | 0.058 |
| Combined routes, Systemic effects, Long Term | | 0.179 |
| **Contributing scenario controlling worker exposure:** Chemical production where opportunity for exposure arises (PROC4) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |

| | | |
|---|---|---|
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Mixing or blending in batch processes (PROC5) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.353 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Use as laboratory reagent (PROC15) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 0.34 mg/kg bw/day | 0.029 |
| Combined routes, Systemic effects, | | 0.089 |

| | | |
|---|---|---|
| Long Term | | |
| **Contributing scenario controlling worker exposure:** Hand-mixing with intimate contact and only PPE available (PROC19) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 3 mg/m³ | 0.361 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 7.072 mg/kg bw/day | 0.599 |
| Combined routes, Systemic effects, Long Term | | 0.961 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |

| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** |
|---|---|
| **4.1. Health** | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | |
| **4.2. Environment** | |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. | |

**Exposure Scenario 6**: **Use at industrial sites - Use as additive in intumescent coatings**

| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
|---|---|---|
| | Use at industrial sites - Use as additive in intumescent coatings | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Use as additive in intumescent coatings | ERC5 |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions | 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 (LEV) | PROC7 |
| CS6 | Industrial spraying without Local Exhaust Ventilation (LEV) | PROC7 |
| CS7 | Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) | PROC8a |
| CS8 | Transfer of substance or mixture (charging and discharging) at dedicated facilities | PROC8b |

| | | |
|---|---|---|
| | (Solid) | |
| 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 |
| CS13 | Hand-mixing with intimate contact and only PPE available | PROC19 |
| CS14 | Manual maintenance (cleaning and repair) of machinery (Solid) | PROC28 |
| CS15 | Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) | PROC8b |
| CS16 | Manual maintenance (cleaning and repair) of machinery (Liquid) | PROC28 |
| CS17 | Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) | PROC8a |

| **SECTION 2:** | **2.0 Conditions of use** |
|---|---|
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Use as additive in intumescent coatings (ERC5) |

| |
|---|
| **Amount used, frequency and duration of use (or from service life)** |
| Daily use amount at site: Not relevant for this material. |
| Annual use amount at site: Not relevant for this material. |
| **Conditions and measures related to biological sewage treatment plant** |
| Biological STP**:** Standard [Effectiveness water: 2.77%] |
| Discharge rate of STP**:** >= 2E3 m3/day |
| Application of the STP sludge on agricultural soil**:** Yes |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day |

| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) |
|---|---|

| |
|---|
| **Product (article) characteristic** |
| Percentage (w/w) of substance in mixture/article: <= 100 % |
| Physical form of the used product: Solid (medium dusty form) |
| **Amount used, frequency and duration of use (or from service life)** |
| Duration of activity: <=8.0 h/day |
| **Technical conditions and measures to control dispersion from source towards the worker** |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) |
| Occupational Health and Safety Management System: Advanced |
| Local exhaust ventilation: No. [Effectiveness inhalation: 0%, Dermal: 0%] |
| **Conditions and measures related to personal protection, hygiene and health evaluation** |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) |
| Dermal protection: No. (Effectiveness dermal: 0 %) |

| | |
|---|---|
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:**<br>2.3 Chemical production where opportunity for exposure arises (PROC4) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.4** | **Contributing scenario controlling worker exposure exposure:**<br>2.4 Mixing or blending in batch processes (PROC5) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.5** | **Contributing scenario controlling worker exposure exposure:**<br>2.5 Industrial spraying with Local Exhaust Ventilation (LEV) (PROC7) |
| **Product (article) characteristic** | |

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| | |
|---|---|
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: Yes (TRA effectiveness)[Effectiveness inhalation: 95%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.6** | **Contributing scenario controlling worker exposure exposure:** 2.6 Industrial spraying without Local Exhaust Ventilation (LEV) (PROC7) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** Yes (Respirator with APF of 10) [Effectiveness inhalation: 90%] | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.7** | **Contributing scenario controlling worker exposure exposure:** 2.7 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |

| | |
|---|---|
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.8** | **Contributing scenario controlling worker exposure exposure:** 2.8 Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.9** | **Contributing scenario controlling worker exposure exposure:** 2.9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |

| | |
|---|---|
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.10** | **Contributing scenario controlling worker exposure exposure:** 2.10 Roller application or brushing (PROC10) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.11** | **Contributing scenario controlling worker exposure exposure:** 2.11 Treatment of articles by dipping and pouring (PROC13) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |

| | |
|---|---|
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.12** | **Contributing scenario controlling worker exposure exposure:** 2.12 Use as laboratory reagent (PROC15) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.13** | **Contributing scenario controlling worker exposure exposure:** 2.13 Hand-mixing with intimate contact and only PPE available (PROC19) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 95%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.14** | **Contributing scenario controlling worker exposure exposure:** |

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|---|---|
| | 2.14 Manual maintenance (cleaning and repair) of machinery (Solid) (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.15** | **Contributing scenario controlling worker exposure exposure:**<br>2.15 Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.16** | **Contributing scenario controlling worker exposure exposure:**<br>2.16 Manual maintenance (cleaning and repair) of machinery (Liquid) (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |

| | |
|---|---|
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.17** | **Contributing scenario controlling worker exposure exposure:** 2.17 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **SECTION 3:** | **3.0 Exposure estimation** |
| **3.1. Environment** | |
| **Contributing scenario controlling environmental exposure:** Use as additive in intumescent coatings (ERC5) | |

| **Release** | **Release estimation method** | **Explanations** |
|---|---|---|
| Water | Estimated release rate | Local release rate: 3 kg/day |
| Air | Estimated release rate | Local release rate: 0.5 kg/day |

| | | |
|---|---|---|
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 0.151 mg/l | 0.30 |
| Sedimentation (Fresh water) | Local PEC: 3.86 mg/kg dw | 0.30 |
| Marine water | Local PEC: 0.015 mg/l | 0.29 |
| Sedimentation (Marine water) | Local PEC: 0.396 mg/kg dw | 0.30 |
| Sewage Treatment Plant | Local PEC: 1.458 mg/l | 0.02 |
| Agricultural soil | Local PEC: 1.014 mg/kg dw | 0.44 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.39E-4 mg/m³ | < 0.01 |
| Man via Environment - Oral | Exposure via food consumption: 0.014 mg/kg bw/day | 0.03 |
| Man via Environment - Combined routes | | 0.03 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions (PROC3) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 0.69 mg/kg bw/day | 0.058 |
| Combined routes, Systemic effects, Long Term | | 0.179 |
| **Contributing scenario controlling worker exposure:** Chemical production where opportunity for exposure arises (PROC4) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Mixing or blending in batch processes (PROC5) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Industrial spraying with Local Exhaust Ventilation (LEV) (PROC7) | | |

## Melamine

| Route of exposure and type of effects | Exposure concentration | Risk quantification (RCR) |
|---|---|---|
| Inhalation, Systemic effects, Long Term | 0.4 mg/m³ | 0.048 |
| Inhalation, Systemic effects, Acute | 0.4 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 8.572 mg/kg bw/day | 0.726 |
| Combined routes, Systemic effects, Long Term | | 0.775 |
| **Contributing scenario controlling worker exposure:** Industrial spraying without Local Exhaust Ventilation (LEV) (PROC7) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.795 mg/m³ | 0.096 |
| Inhalation, Systemic effects, Acute | 0.795 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 8.572 mg/kg bw/day | 0.726 |
| Combined routes, Systemic effects, Long Term | | 0.822 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Solid) (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (Solid) (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.353 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 1.372 mg/kg bw/day | 0.116 |
| Combined routes, Systemic effects, Long Term | | 0.719 |
| **Contributing scenario controlling worker exposure:** Roller application or brushing (PROC10) | | |

## Melamine

| Route of exposure and type of effects | Exposure concentration | Risk quantification (RCR) |
|---|---|---|
| Inhalation, Systemic effects, Long Term | 3.59 mg/m³ | 0.433 |
| Inhalation, Systemic effects, Acute | 3.59 mg/m³ | 0.044 |
| Dermal, Systemic effects, Long Term | 5.486 mg/kg bw/day | 0.465 |
| Combined routes, Systemic effects, Long Term | | 0.897 |
| **Contributing scenario controlling worker exposure:** Treatment of articles by dipping and pouring (PROC13) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.743 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Use as laboratory reagent (PROC15) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.5 mg/m³ | 0.06 |
| Inhalation, Systemic effects, Acute | 2 mg/m³ | 0.024 |
| Dermal, Systemic effects, Long Term | 0.34 mg/kg bw/day | 0.029 |
| Combined routes, Systemic effects, Long Term | | 0.089 |
| **Contributing scenario controlling worker exposure:** Hand-mixing with intimate contact and only PPE available (PROC19) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1.74 mg/m³ | 0.21 |
| Inhalation, Systemic effects, Acute | 1.74 mg/m³ | 0.021 |
| Dermal, Systemic effects, Long Term | 7.072 mg/kg bw/day | 0.599 |
| Combined routes, Systemic effects, Long Term | | 0.809 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (Solid) (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.835 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (Liquid) (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |

| | | |
|---|---|---|
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.743 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (Liquid) (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (Liquid) (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** | |
| **4.1. Health** | | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | | |
| **4.2. Environment** | | |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. | | |

**Exposure Scenario 7**: **Widespread use by professional workers - Use as additive in intumescent coatings**

| | |
|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** |
| | Widespread use by professional workers - Use as additive in intumescent coatings |

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| | | |
|---|---|---|
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Use as additive in intumescent coatings | ERC8c, ERC8f |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Mixing or blending in batch processes | PROC5 |
| CS3 | Transfer of substance or mixture (charging and discharging) at non-dedicated facilities | PROC8a |
| CS4 | Transfer of substance or mixture (charging and 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 |

| | |
|---|---|
| **SECTION 2:** | **2.0 Conditions of use** |
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Use as additive in intumescent coatings (ERC8c, ERC8f) |

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

Daily local widespread use amount: Not relevant for this material.

**Conditions and measures related to biological sewage treatment plant**

Biological STP**:** Standard [Effectiveness water: 2.77%]

Discharge rate of STP**:** >= 2E3 m3/day

Application of the STP sludge on agricultural soil**:** Yes

**Other given operational conditions affecting environmental exposure**

- Receiving surface water flow: >= 1.8E4 m3/day

| | |
|---|---|
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Mixing or blending in batch processes (PROC5) |

**Product (article) characteristic**

Percentage (w/w) of substance in mixture/article: <= 30 %

Physical form of the used product: Liquid

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

Duration of activity: <=8.0 h/day

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

General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %)

Occupational Health and Safety Management System: Basic

Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%]

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

Respiratory protection**:** No. (Effectiveness inhalation: 0 %)

Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%]

**Other given operational conditions affecting workers exposure**

| | |
|---|---|
| Place of use: Indoor | |
| Operating temperature: 115 °C | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:**<br>2.3 Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Basic | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: 115 °C | |
| **2.4** | **Contributing scenario controlling worker exposure exposure:**<br>2.4 Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Basic | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: 115 °C | |

| | |
|---|---|
| **2.5** | **Contributing scenario controlling worker exposure exposure:**<br>2.5 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Basic | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.6** | **Contributing scenario controlling worker exposure exposure:**<br>2.6 Roller application or brushing (PROC10) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Basic | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.7** | **Contributing scenario controlling worker exposure exposure:**<br>2.7 Non industrial spraying (PROC11) |
| **Product (article) characteristic** | |

| | |
|---|---|
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| Ventilation working room: General ventilation (mechanical) | |
| Occupational Health and Safety Management System: Basic | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** Yes (Respirator with APF of 20) Effectiveness inhalation: 95% | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 90%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.8** | **Contributing scenario controlling worker exposure exposure:** 2.8 Treatment of articles by dipping and pouring (PROC13) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Basic | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| Operating temperature: >115 ºC | |
| **2.9** | **Contributing scenario controlling worker exposure exposure:** 2.9 Manual maintenance (cleaning and repair) of machinery (PROC28) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % | |
| Physical form of the used product: Liquid | |
| **Amount used, frequency and duration of use (or from service life)** | |

# Melamine

| | | |
|---|---|---|
| Duration of activity: <=8.0 h/day | | |
| **Technical conditions and measures to control dispersion from source towards the worker** | | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | | |
| Occupational Health and Safety Management System: Basic | | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | | |
| Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness dermal: 80%] | | |
| **Other given operational conditions affecting workers exposure** | | |
| Place of use: Indoor | | |
| Operating temperature: >115 °C | | |
| **SECTION 3:** | **3.0 Exposure estimation** | |
| **3.1. Environment** | | |
| **Contributing scenario controlling environmental exposure:** Use as additive in intumescent coatings (ERC8c, ERC8f) | | |
| **Release** | **Release estimation method** | **Explanations** |
| Water | Estimated release rate | Local release rate: 0 kg/day |
| Air | Estimated release rate | Local release rate: 0 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 5.0E-3 mg/l | 0.01 |
| Sedimentation (Fresh water) | Local PEC: 0.128 mg/kg dw | 0.01 |
| Marine water | Local PEC: 4.82E-4 mg/l | 0.01 |
| Sedimentation (Marine water) | Local PEC: 0.012 mg/kg dw | 0.01 |
| Sewage Treatment Plant | Local PEC: 0 mg/l | <0.01 |
| Agricultural soil | Local PEC: 2.82E-11 mg/kg dw | <0.01 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.3E-21 mg/m³ | <0.01 |
| Man via Environment - Oral | Exposure via food consumption: 1.74E-4 mg/kg bw/day | <0.01 |
| Man via Environment - Combined routes | | <0.01 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Mixing or blending in batch processes (PROC5) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, | | 0.296 |

| | | |
|---|---|---|
| Long Term | | |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.743 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.742 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 6.86 mg/kg bw/day | 0.581 |
| Combined routes, Systemic effects, Long Term | | 0.644 |
| **Contributing scenario controlling worker exposure:** Roller application or brushing (PROC10) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 3.61 mg/m³ | 0.435 |
| Inhalation, Systemic effects, Acute | 3.61 mg/m³ | 0.044 |
| Dermal, Systemic effects, Long Term | 5.486 mg/kg bw/day | 0.465 |
| Combined routes, Systemic effects, Long Term | | 0.9 |
| **Contributing scenario controlling worker exposure:** Non industrial spraying (PROC11) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.398 mg/m³ | 0.048 |
| Inhalation, Systemic effects, Acute | 0.398 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 10.71 mg/kg bw/day | 0.908 |
| Combined routes, Systemic effects, Long Term | | 0.956 |

| **Contributing scenario controlling worker exposure:** Treatment of articles by dipping and pouring (PROC13) | | |
|---|---|---|
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.743 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |
| **Contributing scenario controlling worker exposure:** Manual maintenance (cleaning and repair) of machinery (PROC28) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 0.525 mg/m³ | 0.063 |
| Inhalation, Systemic effects, Acute | 0.525 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 2.743 mg/kg bw/day | 0.232 |
| Combined routes, Systemic effects, Long Term | | 0.296 |

| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** |
|---|---|
| **4.1. Health** | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | |
| **4.2. Environment** | |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. | |

**Exposure Scenario 8: Service life (worker at industrial site) - PU foams - Workers (industrial)**

| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
|---|---|---|
| | Widespread use by professional workers - Use as additive in intumescent coatings | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | PU foams - Workers (industrial) | ERC12a |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Low energy manipulation of substances bound in materials and/or articles | PROC21 |
| CS3 | High (mechanical) energy work-up of substances bound in materials and/or articles | PROC24 |

| **SECTION 2:** | **2.0 Conditions of use** |
|---|---|
| **2.1** | **Contributing scenario controlling environmental exposure:** 2.1 PU foams - Workers (industrial) (ERC12a) |
| **Amount used, frequency and duration of use (or from service life)** | |
| Daily use amount at site: Not relevant for this material. | |
| Annual use amount at site: Not relevant for this material. | |
| **Conditions and measures related to biological sewage treatment plant** | |
| Biological STP**:** Standard [Effectiveness water: 2.77%] | |
| Discharge rate of STP**:** >= 2E3 m3/day | |

| | |
|---|---|
| Application of the STP sludge on agricultural soil**:** Yes | |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day | |
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Low energy manipulation of substances bound in materials and/or articles (PROC21) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:**<br>2.3 High (mechanical) energy work-up of substances bound in materials and/or articles (PROC24) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **SECTION 3:** | **3.0 Exposure estimation** |
| **3.1. Environment** | |

## Melamine

| **Contributing scenario controlling environmental exposure:** PU foams - Workers (industrial) (ERC12a) | | |
|---|---|---|
| **Release** | **Release estimation method** | **Explanations** |
| Water | Estimated release rate | Local release rate: 0 kg/day |
| Air | Estimated release rate | Local release rate: 0 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 5.0E-3 mg/l | 0.01 |
| Sedimentation (Fresh water) | Local PEC: 0.128 mg/kg dw | 0.01 |
| Marine water | Local PEC: 3.87E-4 mg/l | 0.01 |
| Sedimentation (Marine water) | Local PEC: 9.9E-3 mg/kg dw | 0.01 |
| Sewage Treatment Plant | Local PEC: 0 mg/l | <0.01 |
| Agricultural soil | Local PEC: 2.26E-11 mg/kg dw | <0.01 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.3E-21 mg/m³ | <0.01 |
| Man via Environment - Oral | Exposure via food consumption: 1.74E-4 mg/kg bw/day | <0.01 |
| Man via Environment - Combined routes | | <0.01 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Low energy manipulation of substances bound in materials and/or articles (PROC21) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 3 mg/m³ | 0.361 |
| Inhalation, Systemic effects, Acute | 12 mg/m³ | 0.146 |
| Dermal, Systemic effects, Long Term | 2.83 mg/kg bw/day | 0.24 |
| Combined routes, Systemic effects, Long Term | | 0.601 |
| **Contributing scenario controlling worker exposure:** High (mechanical) energy work-up of substances bound in materials and/or articles (PROC24) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 2.83 mg/kg bw/day | 0.24 |
| Combined routes, Systemic effects, Long Term | | 0.36 |
| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** | |
| **4.1. Health** | | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | | |
| **4.2. Environment** | | |

| |
|---|
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. |

**Exposure Scenario 9**: **Service life (worker at industrial site) - Intumescent coatings - Workers (industrial)**

| | | |
|---|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
| | Service life (worker at industrial site) - Intumescent coatings - Workers (industrial) | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Intumescent coatings - Workers (industrial) | ERC12a |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Low energy manipulation of substances bound in materials and/or articles | PROC21 |
| CS3 | High (mechanical) energy work-up of substances bound in materials and/or articles | PROC24 |
| **SECTION 2:** | **2.0 Conditions of use** | |
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Intumescent coatings - Workers (industrial) (ERC12a) | |
| **Amount used, frequency and duration of use (or from service life)** | | |
| Daily use amount at site: Not relevant for this material. | | |
| Annual use amount at site: Not relevant for this material. | | |
| **Conditions and measures related to biological sewage treatment plant** | | |
| Biological STP**:** Standard [Effectiveness water: 2.77% | | |
| Discharge rate of STP**:** >= 2E3 m3/day | | |
| Application of the STP sludge on agricultural soil**:** Yes | | |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day | | |
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Low energy manipulation of substances bound in materials and/or articles (PROC21) | |
| **Product (article) characteristic** | | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | | |
| Physical form of the used product: Solid (medium dusty form) | | |
| **Amount used, frequency and duration of use (or from service life)** | | |
| Duration of activity: <=8.0 h/day | | |
| **Technical conditions and measures to control dispersion from source towards the worker** | | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | | |
| Occupational Health and Safety Management System: Advanced | | |

| | |
|---|---|
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **2.3** | **Contributing scenario controlling worker exposure exposure:** 2.3 High (mechanical) energy work-up of substances bound in materials and/or articles (PROC24) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 100 % | |
| Physical form of the used product: Solid (medium dusty form) | |
| **Amount used, frequency and duration of use (or from service life)** | |
| Duration of activity: <=8.0 h/day | |
| **Technical conditions and measures to control dispersion from source towards the worker** | |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) | |
| Occupational Health and Safety Management System: Advanced | |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] | |
| **Conditions and measures related to personal protection, hygiene and health evaluation** | |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) | |
| Dermal protection: No. (Effectiveness dermal: 0 %) | |
| **Other given operational conditions affecting workers exposure** | |
| Place of use: Indoor | |
| **SECTION 3:** | **3.0 Exposure estimation** |
| **3.1. Environment** | |
| **Contributing scenario controlling environmental exposure:** Intumescent coatings - Workers (industrial) (ERC12a) | |

| **Release** | **Release estimation method** | **Explanations** |
|---|---|---|
| Water | Estimated release rate | Local release rate: 0 kg/day |
| Air | Estimated release rate | Local release rate: 0 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 5.0E-3 mg/l | 0.01 |
| Sedimentation (Fresh water) | Local PEC: 0.128 mg/kg dw | 0.01 |
| Marine water | Local PEC: 4.82E-4 mg/l | 0.01 |
| Sedimentation (Marine water) | Local PEC: 0.012 mg/kg dw | 0.01 |
| Sewage Treatment Plant | Local PEC: 0 mg/l | <0.01 |
| Agricultural soil | Local PEC: 2.82E-11 mg/kg dw | <0.01 |
| Man via Environment - Inhalation | Concentration in air: 1.3E-21 mg/m³ | <0.01 |

| | | |
|---|---|---|
| (Systemic effects) | | |
| Man via Environment - Oral | Exposure via food consumption: 1.74E-4 mg/kg bw/day | <0.01 |
| Man via Environment - Combined routes | | <0.01 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Low energy manipulation of substances bound in materials and/or articles (PROC21) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 3 mg/m³ | 0.361 |
| Inhalation, Systemic effects, Acute | 12 mg/m³ | 0.146 |
| Dermal, Systemic effects, Long Term | 2.83 mg/kg bw/day | 0.24 |
| Combined routes, Systemic effects, Long Term | | 0.601 |
| **Contributing scenario controlling worker exposure:** High (mechanical) energy work-up of substances bound in materials and/or articles (PROC24) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 1 mg/m³ | 0.12 |
| Inhalation, Systemic effects, Acute | 4 mg/m³ | 0.049 |
| Dermal, Systemic effects, Long Term | 2.83 mg/kg bw/day | 0.24 |
| Combined routes, Systemic effects, Long Term | | 0.36 |
| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** | |
| **4.1. Health** | | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | | |
| **4.2. Environment** | | |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. | | |

**Exposure Scenario 10: Service life (professional worker) - Intumescent coatings - Professional Workers**

| | |
|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** |
| | Service life (professional worker) - Intumescent coatings - Professional Workers |
| **Contributing scenario controlling environmental exposure** | |

**Melamine**

| | | |
|---|---|---|
| CS1 | Intumescent coatings - Professional Workers | ERC10a, ERC11a |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Low energy manipulation of substances bound in materials and/or articles | PROC21 |

| | |
|---|---|
| **SECTION 2:** | **2.0 Conditions of use** |
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Intumescent coatings - Professional Workers (ERC10a, ERC11a) |

| |
|---|
| **Amount used, frequency and duration of use (or from service life)** |
| Daily local widespread use amount: Not relevant for this material. |
| **Conditions and measures related to biological sewage treatment plant** |
| Biological STP**:** Standard [Effectiveness water: 2.77%] |
| Discharge rate of STP**:** >= 2E3 m3/day |
| Application of the STP sludge on agricultural soil**:** Yes |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day |

| | |
|---|---|
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Low energy manipulation of substances bound in materials and/or articles (PROC21) |

| |
|---|
| **Product (article) characteristic** |
| Percentage (w/w) of substance in mixture/article: <= 100 % |
| Physical form of the used product: Solid (medium dusty form) |
| **Amount used, frequency and duration of use (or from service life)** |
| Duration of activity: <=8.0 h/day |
| **Technical conditions and measures to control dispersion from source towards the worker** |
| General ventilation: Basic general ventilation (1-3 air changes per hour) (Effectiveness inhalation: 0 %) |
| Occupational Health and Safety Management System: Basic |
| Local exhaust ventilation: No [Effectiveness inhalation: 0%, Dermal: 0%] |
| **Conditions and measures related to personal protection, hygiene and health evaluation** |
| Respiratory protection**:** No. (Effectiveness inhalation: 0 %) |
| Dermal protection: No. (Effectiveness dermal: 0 %) |
| **Other given operational conditions affecting workers exposure** |
| Place of use: Indoor |

| | |
|---|---|
| **SECTION 3:** | **3.0 Exposure estimation** |
| **3.1. Environment** | |

**Contributing scenario controlling environmental exposure:** Intumescent coatings - Professional Workers (ERC10a, ERC11a)

| **Release** | **Release estimation method** | **Explanations** |
|---|---|---|
| Water | Estimated release rate | Local release rate: 0 kg/day |
| Air | Estimated release rate | Local release rate: 0 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |

## Melamine

| | | |
|---|---|---|
| Fresh water | Local PEC: 5.0E-3 mg/l | 0.01 |
| Sedimentation (Fresh water) | Local PEC: 0.128 mg/kg dw | 0.01 |
| Marine water | Local PEC: 4.82E-4 mg/l | 0.01 |
| Sedimentation (Marine water) | Local PEC: 0.012 mg/kg dw | 0.01 |
| Sewage Treatment Plant | Local PEC: 0 mg/l | <0.01 |
| Agricultural soil | Local PEC: 2.82E-11 mg/kg dw | <0.01 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.3E-21 mg/m³ | <0.01 |
| Man via Environment - Oral | Exposure via food consumption: 1.74E-4 mg/kg bw/day | <0.01 |
| Man via Environment - Combined routes | | <0.01 |
| **3.2. Workers** | | |
| **Contributing scenario controlling worker exposure:** Low energy manipulation of substances bound in materials and/or articles (PROC21) | | |
| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
| Inhalation, Systemic effects, Long Term | 5 mg/m³ | 0.602 |
| Inhalation, Systemic effects, Acute | 20 mg/m³ | 0.243 |
| Dermal, Systemic effects, Long Term | 2.83 mg/kg bw/day | 0.24 |
| Combined routes, Systemic effects, Long Term | | 0.842 |
| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** | |
| **4.1. Health** | | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | | |
| **4.2. Environment** | | |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. | | |

**Exposure Scenario 11: Service life (consumers) - PU foams – Consumers**

| | | |
|---|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
| | Service life (consumers) - PU foams – Consumers | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | PU foams – Consumers | ERC10a, ERC11a |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Use of articles containing foam with the substance embedded in a matrix (encapsulated) | AC13 |
| **SECTION 2:** | **2.0 Conditions of use** | |
| **2.1** | **Contributing scenario controlling environmental exposure:** | |

**Melamine**

| | |
|---|---|
| | 2.1 PU foams – Consumers (ERC10a, ERC11a) |
| **Amount used, frequency and duration of use (or from service life)** | |
| Daily local widespread use amount: Not relevant for this material. | |
| **Conditions and measures related to biological sewage treatment plant** | |
| Biological STP**:** Standard [Effectiveness water: 2.77%] | |
| Discharge rate of STP**:** >= 2E3 m3/day | |
| Application of the STP sludge on agricultural soil**:** Yes | |
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day | |
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Use of articles containing foam with the substance embedded in a matrix (encapsulated) (AC13) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % (embedded in the foam, contained in the article) | |
| Exposure via inhalation route: Inhalation exposure is considered to be not relevant | |
| Exposure via oral route: Oral exposure is considered to be not relevant | |
| **SECTION 3:** | **3.0 Exposure estimation** |

**3.1. Environment**

**Contributing scenario controlling environmental exposure:** PU foams – Consumers (ERC10a, ERC11a)

| **Release** | **Release estimation method** | **Explanations** |
|---|---|---|
| Water | Estimated release rate | Local release rate: 0 kg/day |
| Air | Estimated release rate | Local release rate: 0 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 5.0E-3 mg/l | 0.01 |
| Sedimentation (Fresh water) | Local PEC: 0.128 mg/kg dw | 0.01 |
| Marine water | Local PEC: 4.82E-4 mg/l | 0.01 |
| Sedimentation (Marine water) | Local PEC: 0.012 mg/kg dw | 0.01 |
| Sewage Treatment Plant | Local PEC: 0 mg/l | <0.01 |
| Agricultural soil | Local PEC: 2.82E-11 mg/kg dw | <0.01 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.3E-21 mg/m³ | <0.01 |
| Man via Environment - Oral | Exposure via food consumption: 1.74E-4 mg/kg bw/day | <0.01 |
| Man via Environment - Combined routes | | <0.01 |

**3.2. Workers**

**Contributing scenario controlling worker exposure:** Use of articles containing foam with the substance embedded in a matrix (encapsulated) (AC13)

| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
|---|---|---|

| | | |
|---|---|---|
| Inhalation, Systemic effects, Long Term | Negligible (Migration study) | <0.01 |
| Dermal, Systemic effects, Long Term | 0.1484 mg/kg bw/day for a baby, when using additional sheets for mattress protection and comfort (Migration study)<br><br>0.06375 mg/kg bw/day for an adult, when using additional sheets for mattress protection and comfort (Migration study)<br><br>0.6375 mg/kg bw/day for an adult, when sleeping directly on the mattress cover (Migration study)<br>1.484 mg/kg bw/day for a baby, when sleeping directly on the mattress cover (Migration study) | 0.035<br><br>0.015 |
| Oral, Systemic effects, Long Term | Negligible (Migration study) | <0.01 |
| Combined routes, Systemic effects, Long Term | | 0.035 (for a baby)<br>0.015 (for an adult) |

| | |
|---|---|
| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** |
| **4.1. Health** | |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. | |
| **4.2. Environment** | |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. | |

**Exposure Scenario 12**: **Service life (consumers) - Intumescent coating – Consumers**

| | | |
|---|---|---|
| **SECTION 1:** | **1.0 Title of Exposure Scenario:** | |
| | Service life (consumers) - Intumescent coating – Consumers | |
| **Contributing scenario controlling environmental exposure** | | |
| CS1 | Intumescent coating – Consumers | ERC10a, ERC11a |
| **Contributing scenario controlling worker exposure** | | |
| CS2 | Use of articles with intumescent coating with the substance embedded in a matrix (encapsulated) | AC13 |
| **SECTION 2:** | **2.0 Conditions of use** | |
| **2.1** | **Contributing scenario controlling environmental exposure:**<br>2.1 Intumescent coating – Consumers (ERC10a, ERC11a) | |
| **Amount used, frequency and duration of use (or from service life)** | | |
| Daily local widespread use amount: Not relevant for this material. | | |
| **Conditions and measures related to biological sewage treatment plant** | | |
| Biological STP**:** Standard [Effectiveness water: 2.77%] | | |
| Discharge rate of STP**:** >= 2E3 m3/day | | |
| Application of the STP sludge on agricultural soil**:** Yes | | |

# Melamine

| | |
|---|---|
| **Other given operational conditions affecting environmental exposure**<br>• Receiving surface water flow: >= 1.8E4 m3/day | |
| **2.2** | **Contributing scenario controlling worker exposure exposure:**<br>2.2 Use of articles with intumescent coating with the substance embedded in a matrix (encapsulated) (AC13) |
| **Product (article) characteristic** | |
| Percentage (w/w) of substance in mixture/article: <= 30 % (embedded in a solid matrix) | |
| Exposure via inhalation route: Inhalation exposure is considered to be not relevant | |
| Exposure via dermal route: Dermal exposure is considered to be not relevant | |
| Exposure via oral route: Oral exposure is considered to be not relevant | |
| **SECTION 3:** | **3.0 Exposure estimation** |

**3.1. Environment**

**Contributing scenario controlling environmental exposure:** Intumescent coating – Consumers (ERC10a, ERC11a)

| **Release** | **Release estimation method** | **Explanations** |
|---|---|---|
| Water | Estimated release rate | Local release rate: 0 kg/day |
| Air | Estimated release rate | Local release rate: 0 kg/day |
| Non-Agricultural Soil | Estimated release factor | Release factor after on site RMM: 0% |
| **Protection target** | **Exposure concentration** | **Risk quantification (RCR)** |
| Fresh water | Local PEC: 5.0E-3 mg/l | 0.01 |
| Sedimentation (Fresh water) | Local PEC: 0.128 mg/kg dw | 0.01 |
| Marine water | Local PEC: 4.82E-4 mg/l | 0.01 |
| Sedimentation (Marine water) | Local PEC: 0.012 mg/kg dw | 0.01 |
| Sewage Treatment Plant | Local PEC: 0 mg/l | <0.01 |
| Agricultural soil | Local PEC: 2.82E-11 mg/kg dw | <0.01 |
| Man via Environment - Inhalation (Systemic effects) | Concentration in air: 1.3E-21 mg/m³ | <0.01 |
| Man via Environment - Oral | Exposure via food consumption: 1.74E-4 mg/kg bw/day | <0.01 |
| Man via Environment - Combined routes | | <0.01 |

**3.2. Workers**

**Contributing scenario controlling worker exposure:** Use of articles with intumescent coating with the substance embedded in a matrix (encapsulated) (AC13)

| **Route of exposure and type of effects** | **Exposure concentration** | **Risk quantification (RCR)** |
|---|---|---|
| Inhalation, Systemic effects, Long Term | 0 mg/m³ | <0.01 |
| Dermal, Systemic effects, Long Term | 0 mg/kg bw/day | <0.01 |
| Oral, Systemic effects, Long Term | 0 mg/kg bw/day | <0.01 |
| Combined routes, Systemic effects, Long Term | | <0.01 |

| | |
|---|---|
| **SECTION 4:** | **4.0 Guidance to DU to evaluate whether he works inside the boundaries set by the ES** |

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| 4.1. Health |
| --- |
| Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. |
| **4.2. Environment** |
| Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling could be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use, additional RMMs or a site-specific chemical safety assessment is required. |