

Safety Data Sheet

according to Regulation (EC) 1907/2006 (REACH)

Revision date: 2020-08-03

Supersedes: 2019-03-28

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

1.1. Product identifier:

Product trade name: EPALLOY* 8370
Company product number: 8370
REACH registration number: 01-2119454392-40-0021
Substance name: Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)] bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)] bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane)
Substance identification number: EC 701-263-0
Other means of identification: BPFEDGE, Epoxy phenol novolac resin

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

Uses: Epoxy resin. See Annex for covered uses.
Uses advised against: None identified

1.3. Details of the supplier of the safety data sheet:

Manufacturer/Supplier: CVC Thermoset Specialties
 2980 Route 73 North
 Maple Shade, New Jersey 08052 United States
 Customer service telephone: +1-856-533-3000
EU Only Representative: Penman Consulting bvba
 Avenue des Arts 10
 B-1210 Brussels
 Belgium
 Telephone: +32 (0) 2 305 0698
 email: pcbvba09@penmanconsulting.com
 Email: cts.customerservice@huntsman.com
For further information about this SDS:

1.4. Emergency telephone number:

ChemTel (24 hours): 1-800-255-3924 (USA); +1-813-248-0585 (outside USA).

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture:

Product classification according to Regulation (EC) 1272/2008 (CLP) as amended:

Skin Irritation, category 2, H315
 Skin Sensitizer, category 1, H317
 Hazardous to the aquatic environment, Chronic, category 2, H411

2.2. Label elements:

Product labeling according to Regulation (EC) 1272/2008 (CLP) as amended:

Hazard pictogram(s):



Signal word:

Warning

Hazard statements:

SDS Name: EPALLOY* 8370

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Supplemental information: No Additional Information

Precautionary statements are listed according to the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Annex III and ECHA Guidance on Labelling and Packaging. Regulations in individual countries/regions may determine which statements are required on the product label. See product label for specifics.

2.3. Other hazards:

PBT/vPvB criteria: This product does not meet the PBT and vPvB classification criteria.
Other hazards: No Additional Information

See Section 11 for toxicological information.

SECTION 3: Composition/information on ingredients

3.1. Substance:

| <u>CAS-No.</u> | <u>Chemical Name</u> | <u>Weight%</u> | <u>Classification</u> | <u>H Statements</u> |
|----------------|--------------------------------------|----------------|--|-----------------------|
| 0028064-14-4 | Epoxy phenol novolac resin (BPFEDGE) | 99-100 | Aquatic Chronic 2- Skin Irrit. 2- Skin Sens. 1 | H315-317-411 |
| <u>CAS-No.</u> | <u>Chemical Name</u> | <u>Weight%</u> | <u>REACH Registration No.</u> | <u>EC/List Number</u> |
| 0028064-14-4 | Epoxy phenol novolac resin (BPFEDGE) | 99-100 | 01-2119454392-40-0021 | 701-263-0 |

See Section 16 for full text of H (Hazard) statements (EC 1272/2008).

Notes: EPOXY PHENOL NOVOLAC RESIN (BPFEDGE): Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)] bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)] bis(oxirane) and 2-([2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy]methyl)oxirane).

Amounts specified are typical and do not represent a specification. Remaining components are proprietary, non-hazardous, and/or present at amounts below reportable limits.

SECTION 4: First aid measures

4.1. Description of first aid measures:

General: If irritation or other symptoms occur or persist from any route of exposure, remove the affected individual from the area: see a physician/get medical attention.

Eye contact: Any material that contacts the eye should be washed out immediately with water. Get medical attention if symptoms occur.

Skin contact: Immediately remove contaminated clothing and shoes. Wash the affected area with plenty of soap and water until no evidence of the chemical remains (at least 15-20 minutes). Launder clothing before reuse. If skin irritation occurs: Get medical advice/attention.

Inhalation: If affected, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse out the mouth with water. Get medical attention immediately.

Protection of first aid responders: Wear proper personal protective clothing and equipment.

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

Irritation. Pre-existing skin problems may be aggravated by prolonged or repeated contact. See section 11 for additional information.

4.3. Indication of any immediate medical attention and special treatment needed:

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media:

Suitable: Use water spray, ABC dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unsuitable: None known.

5.2. Special hazards arising from the substance or mixture:

Unusual fire/explosion hazards: Product is not considered a fire hazard, but will burn if ignited. Closed container may rupture (due to build up in pressure) when exposed to extreme heat.

Hazardous combustion products: Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See section 10 (10.6 Hazardous decomposition products) for additional information.

5.3. Advice for firefighters:

Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

See section 9 for additional information.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures:

See Section 8 for recommendations on the use of personal protective equipment. If spilled in an enclosed area, ventilate. Eliminate ignition sources. Personal Protective Equipment must be worn.

6.2. Environmental precautions:

Do not flush liquid into public sewer, water systems or surface waters.

6.3. Methods and material for containment and cleaning up:

Contain by diking with sand, earth or other non-combustible material. Wear proper personal protective clothing and equipment. Absorb spill with an inert material. Place into labeled, closed container; store in safe location to await disposal. Change contaminated clothing and launder before reuse. Eliminate ignition sources.

6.4. References to other sections:

See Section 8 for recommendations on the use of personal protection and Section 13 for waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling:

As with any chemical product, use good laboratory/workplace procedures. Do not cut, puncture, or weld on or near the container. Wash thoroughly after handling this product. Always wash up before eating, smoking or using the facilities. Use under well-ventilated conditions. Avoid eye and skin contact. Avoid inhalation of aerosol, mist, spray, fume or vapor. Avoid drinking, tasting, swallowing or ingesting this product. Wash contaminated clothing before reuse. Discard shoes contaminated with this product. Provide eyewash fountains and safety showers in the work area.

7.2. Conditions for safe storage, including any incompatibilities:

Store cool and dry, under well-ventilated conditions. Keep away from heat, sparks and open flames. Store this material away from incompatible substances (see section 10). Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Do not reuse empty container without commercial cleaning or reconditioning. Empty container contains residual product which may exhibit hazards of product.

7.3. Specific end use(s):

Further information concerning special risk management measures: see annex of this safety data sheet (exposure scenarios).

SECTION 8: Exposure controls / personal protection

8.1. Control parameters:

Occupational exposure limits (OEL):

| <u>Chemical Name</u> | <u>EU OELV</u> | <u>EU IOELV</u> | <u>ACGIH - TWA/Ceiling</u> | <u>ACGIH - STEL</u> |
|--------------------------------------|----------------|--------------------|----------------------------|---------------------|
| Epoxy phenol novolac resin (BPFEDGE) | N/E | N/E | N/E | N/E |
| <u>Chemical Name</u> | <u>UK WEL</u> | <u>Ireland OEL</u> | | |
| Epoxy phenol novolac resin (BPFEDGE) | N/E | N/E | | |

N/E=Not established (no exposure limits established for the listed substances for listed country/region/organization).

Derived No Effect Levels (DNELs):

Epoxy phenol novolac resin (BPFEDGE)

| <u>Population</u> | <u>Route</u> | <u>Acute (local)</u> | <u>Acute (systemic)</u> | <u>Long Term (local)</u> | <u>Long Term (systemic)</u> |
|--------------------|--------------|-------------------------------|-------------------------|--------------------------|-----------------------------|
| Workers | Inhalation | N/E | N/E | N/E | 29,39 mg/m ³ |
| Workers | Dermal | 8,3 µg/cm ² (DMEL) | N/E | N/E | 104,15 mg/kg bw/day |
| General population | Inhalation | N/E | N/E | N/E | 8,7 mg/m ³ |
| General population | Dermal | N/E | N/E | N/E | 62,5 mg/kg bw/day |
| General population | Oral | N/E | N/E | N/E | 6,25 mg/kg bw/day |

Predicted No Effect Concentration (PNECs):

Epoxy phenol novolac resin (BPFEDGE)

| <u>Compartment</u> | <u>PNEC</u> |
|-----------------------|----------------------------------|
| Freshwater | 0,003 mg/L |
| Freshwater sediment | 0,294 mg/kg dw |
| Marine water | 0,0003 mg/L |
| Marine water sediment | 0,0294 mg/kg dw |
| Intermittent releases | 0,0254 mg/L |
| Soil | 0,237 mg/kg dw |
| STP | 10 mg/L |
| Oral | No potential for bioaccumulation |

N/E=Not established; N/A=Not applicable (not required); bw=body weight; dw=dry weight; ww=wet weight.

8.2. Exposure controls:

Appropriate engineering controls: Always provide effective general and, when necessary, local exhaust ventilation to draw spray, aerosol, fume, mist and vapor away from workers to prevent routine inhalation. Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in the SDS.

Individual protection measures, such as personal protective equipment:

Eye/face protection: Wear eye protection.

Hand protection: Avoid skin contact when mixing or handling the material by wearing impervious and chemical resistant gloves. In case of prolonged immersion or frequently repeated contact, gloves with breakthrough times greater than 480 minutes (protection class 6) are recommended. For brief contact or splash applications, gloves with breakthrough times of 30 minutes or greater are recommended (protection class 2 or greater). Suggested materials for protective gloves: Butyl rubber, Nitrile rubber, Neoprene. The protective gloves to be used must comply with the specifications of the EC directive 89/686/EEC and the resultant standard EN 374. Suitability and durability of a glove is dependent on usage (e.g. frequency and duration of contact, other chemicals which may be handled, chemical resistance of glove material and dexterity). Always seek advice of the glove supplier as to the most suitable glove material.

Skin and body protection: Use good laboratory/workplace procedures including personal protective clothing: labcoat, safety glasses and protective gloves.

Respiratory protection: Wear an approved respirator (e.g., an organic vapor respirator, a full face air purifying respirator for organic vapors, or a self-contained breathing apparatus) whenever exposure to aerosol, mist, spray, fume or vapor

exceed the applicable exposure limit(s) of any chemical substance listed in this SDS.

Further information: Eyewash fountains and safety showers are recommended in the work area.

Environmental exposure controls: See Sections 6 and 12.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties:

| | | | |
|--------------------------------------|------------------------|---|--|
| Form: | Viscous liquid | pH: | Not Available |
| Appearance: | Clear, Pale yellow | Relative density: | 1.20 |
| Odour: | Slight aromatic | Partition coefficient (n-octanol/water): | 3.6 |
| Odour threshold: | Not Available | % Volatile by weight: | Not Available |
| Solubility in water: | Negligible | VOC: | Not Available |
| Evaporation rate: | Not Available | Boiling point °C: | >200 °C |
| Vapour pressure: | <1 mm Hg @ 20°C | Boiling point °F: | >392 °F |
| Vapour density: | Heavier than air | Flash point: | >200 °C (>392 °F) Setflash (Closed Tester) |
| Viscosity: | 15000-25000 cps @ 72°C | Autoignition temperature: | Not Available |
| Melting point/Freezing point: | Not Available | Flammability (solid, gas): | Not Applicable (liquid) |
| Oxidising properties: | Not oxidizing | Flammability or explosive limits: | LFL/LEL: Not Available |
| Explosive properties: | Not explosive | | UFL/UEL: Not Available |
| Decomposition temperature: | Not Available | Surface tension: | |

9.2. Other information:

Amounts specified are typical and do not represent a specification.

SECTION 10: Stability and reactivity

10.1. Reactivity:

Exothermic reactions including polymerization may occur in contact with amines, strong acids, strong bases, alcohols, strong oxidizing agents and excessive heat.

10.2. Chemical stability:

This product is stable.

10.3. Possibility of hazardous reactions:

Hazardous polymerization will occur. This product will autopolymerize at very high temperatures.

10.4. Conditions to avoid:

Excessive heat and ignition sources.

10.5. Incompatible materials:

Avoid strong acids, bases, and oxidizing agents. Avoid contact with amines.

10.6. Hazardous decomposition products:

Thermal decomposition may produce smoke, carbon monoxide, carbon dioxide, aldehydes and other products of incomplete combustion. Phenolics.

SECTION 11: Toxicological information

11.1. Information on toxicological effects:

Information on likely routes of exposure:

General: Caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure.

Eyes: May cause eye irritation.

Skin: May cause allergic skin reaction. Causes skin irritation.

Inhalation: High airborne concentrations of vapors resulting from heating, misting or spraying may cause irritation of the respiratory tract and mucous membranes.

Ingestion: Ingestion may cause irritation.

Acute toxicity information: Not classified (based on available data, the classification criteria are not met).

| <u>Chemical Name</u> | <u>Inhalation LC50</u> | <u>Species</u> | <u>Oral LD50</u> | <u>Species</u> | <u>Dermal LD50</u> | <u>Species</u> |
|--------------------------------------|------------------------|----------------|------------------|----------------|--------------------|----------------|
| Epoxy phenol novolac resin (BPFEDGE) | N/E | N/E | >5000 mg/kg | Rat/ adult | >2000 mg/kg | Rat/ adult |

Skin corrosion/irritation: Causes skin irritation - Category 2.

| <u>Chemical Name</u> | <u>Skin irritation</u> | <u>Species</u> |
|--------------------------------------|------------------------|----------------|
| Epoxy phenol novolac resin (BPFEDGE) | Irritant | Rabbit/ adult |

Serious eye damage/irritation: Not classified (based on available data, the classification criteria are not met).

| <u>Chemical Name</u> | <u>Eye irritation</u> | <u>Species</u> |
|--------------------------------------|-------------------------|----------------|
| Epoxy phenol novolac resin (BPFEDGE) | Non-irritant (OECD 405) | Rabbit/ adult |

Respiratory or skin sensitization: Skin sensitization - Category 1.

| <u>Chemical Name</u> | <u>Skin sensitisation</u> | <u>Species</u> |
|--------------------------------------|---------------------------|-----------------------------------|
| Epoxy phenol novolac resin (BPFEDGE) | Sensitizer | Local Lymph Node Assay (OECD 429) |

Carcinogenicity: Not classified (no relevant information found).

Germ cell mutagenicity: Not classified (based on available data, the classification criteria are not met). EPOXY PHENOL NOVOLAC RESIN (BPFEDGE): Mutagenicity was negative in multiple in-vivo genotoxicity assays. Mutagenicity was positive in several in-vitro genotoxicity assays.

Reproductive toxicity: Not classified (based on available data, the classification criteria are not met). EPOXY PHENOL NOVOLAC RESIN (BPFEDGE)-READ-ACROSS: Reproductive toxicity, oral study in rats: NOAEL (no-observed adverse-effect-level) of 750 mg/kg bw/day. Developmental toxicity: oral, rat - NOAEL of 180 mg/kg bw/day; dermal, rabbit - NOAEL of 300 mg/kg bw/day.

Specific target organ toxicity (STOT) - single exposure: Not classified (based on available data, the classification criteria are not met).

Specific target organ toxicity (STOT) - repeated exposure: Not classified (based on available data, the classification criteria are not met). EPOXY PHENOL NOVOLAC RESIN (BPFEDGE): Repeated dose study, 90 day gavage, rat: NOAEL (no-observed-adverse-effect-level)=250 mg/kg bw/day.

Aspiration hazard: Not classified (based on available data, the classification criteria are not met).

Other toxicity information: No additional information available.

SECTION 12: Ecological information

12.1. Toxicity:

| <u>Chemical Name</u> | <u>Species</u> | <u>Acute</u> | <u>Acute</u> | <u>Chronic</u> |
|--------------------------------------|-----------------|--|-----------------------------|---|
| Epoxy phenol novolac resin (BPFEDGE) | Fish | LC50 2.54 mg/L (96 hours) (weight of evidence) | LC50 5.7 mg/L(96 hours) | N/E |
| Epoxy phenol novolac resin (BPFEDGE) | Invertebrates | EC50 2.55 mg/L (48 hours) (weight of evidence) | EC50 1.6-3.5 mg/L(48 hours) | NOEC 0.3 mg/L (21 days) (similar materials) |
| Epoxy phenol novolac resin (BPFEDGE) | Algae | EC50 >1.8 mg/L (72 hours) | N/E | N/E |
| Epoxy phenol novolac resin (BPFEDGE) | Micro-organisms | IC50 >100 mg/L (3 hours) (similar materials) | | |

12.2. Persistence and degradability:

| <u>Chemical Name</u> | <u>Biodegradation</u> |
|--------------------------------------|---------------------------|
| Epoxy phenol novolac resin (BPFEDGE) | Not readily biodegradable |

12.3. Bioaccumulative potential:

| <u>Chemical Name</u> | <u>Bioconcentration Factor (BCF)</u> | <u>Log Kow</u> |
|--------------------------------------|--------------------------------------|----------------|
| Epoxy phenol novolac resin (BPFEDGE) | 150 L/kg (calculated) | 3.6 (OECD 117) |

12.4. Mobility in soil:

Chemical Name

Epoxy phenol novolac resin (BPFEDGE)

Mobility in soil (Koc/Kow)

4460 (OECD 121)

12.5. Results of PBT and vPvB assessment:

This product does not meet the PBT and vPvB classification criteria.

12.6. Other adverse effects:

No additional information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods:

Dispose of unused contents (incineration) in accordance with national and local regulations. Dispose of container in accordance with national and local regulations. Ensure the use of properly authorized waste management companies, where appropriate.

See Section 8 for recommendations on the use of personal protective equipment.

SECTION 14: Transport information

The information below is provided to assist in documentation. It may supplement the information on the package. The package in your possession may carry a different version of the label depending on the date of manufacture. Depending on inner packaging quantities and packaging instructions, it may be subject to specific regulatory exceptions.

14.1. UN number: UN3082

14.2. UN proper shipping name:

Environmentally hazardous substance, liquid, n.o.s. (Epoxy phenol novolac resin)

14.3. Transport hazard class(es):

U.S. DOT hazard class: N/A

Canada TDG hazard class: N/A

Europe ADR/RID hazard class: 9

IMDG Code (ocean) hazard class: 9

ICAO/IATA (air) hazard class: 9

A "N/A" listing for the hazard class indicates the product is not regulated for transport by that regulation.

14.4. Packing group: III

14.5. Environmental hazards:

Marine pollutant: Marine Pollutant (IMDG code 2.9.3).

Hazardous substance (USA): Not Applicable

14.6. Special precautions for user:

Not Applicable

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code:

Not Applicable

Notes: For surface shipments within the United States: Not regulated.

SECTION 15: Regulatory information

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

Europe REACH (EC) 1907/2006: Applicable components are registered, exempt or otherwise compliant. For Europe REACH, Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)] bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)] bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane (EC 701-263-0). REACH is only relevant to substances either manufactured or imported into the EU. Huntsman Corporation has met its obligations under the REACH regulation. REACH information regarding this product is provided for informational purposes only. Each Legal Entity may have differing REACH obligations, depending on their place in the supply chain. For material manufactured outside of the EU, the importer of record must understand and meet their specific obligations under the regulation.

EU Authorizations and/or restrictions on use: Not Applicable

Other EU information: No Additional Information

National regulations: No Additional Information

Chemical inventories:

| <u>Regulation</u> | <u>Status</u> |
|---|---------------|
| Australian Inventory of Chemical Substances (AICS): | Y |
| Canadian Domestic Substances List (DSL): | Y |
| Canadian Non-Domestic Substances List (NDSL): | N |
| China Inventory of Existing Chemical Substances (IECSC): | Y |
| European EC Inventory (EINECS, ELINCS, NLP): | Y |
| Japan Existing and New Chemical Substances (ENCS): | Y |
| Japan Industrial Safety and Health Law (ISHL): | Y |
| Korean Existing and Evaluated Chemical Substances (KECL): | Y |
| New Zealand Inventory of Chemicals (NZIoC): | Y |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS): | Y |
| Taiwan Inventory of Existing Chemicals: | Y |
| U.S. Toxic Substances Control Act (TSCA) (Active): | Y |

A "Y" listing indicates all intentionally added components are either listed or are otherwise compliant with the regulation. A "N" listing indicates that for one or more components: 1) there is no listing on the public inventory (or is not on the ACTIVE inventory for U.S. TSCA); 2) no information is available; or 3) the component has not been reviewed. A "Y" for New Zealand may mean that a qualified group standard may exist for the components in this product.

15.2. Chemical safety assessment:

A chemical safety assessment has been carried out for the substance or mixture.

SECTION 16: Other information

Hazard (H) Statements in the Composition section (Section 3):

| | |
|------|--|
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H411 | Toxic to aquatic life with long lasting effects. |

Reason for revision: Changes in Section(s): 1

Evaluation method for classification of mixtures: Not Applicable (substance)

Legend:

* : Trademark owned by Huntsman Corporation.

ACGIH: American Conference of Governmental Industrial Hygienists

EU OELV: European Union Occupational Exposure Limit Value

EU IOELV: European Union Indicative Occupational Exposure Limit Value

N/A: Not Applicable

N/E: None Established

STEL: Short Term Exposure Limit

TWA: Time Weighted Average (exposure for 8-hour workday)

Users Responsibility/Disclaimer of Liability:

The information set forth herein is based on our current knowledge, and is intended to describe the product solely with respect to

health, safety and the environment. As such, it must not be interpreted as a guarantee of any specific property of the product. As a result, the customer shall be solely responsible for deciding whether said information is suitable and beneficial.

Safety Data Sheet Preparer:
Product Compliance Department

Annex

Exposure Scenarios

Substance information:

Name of substance: Reaction mass of 2,2'-[methylenebis(2,1-phenyleneoxymethylene)] bis(oxirane) and 2,2'-[methylenebis(4,1-phenyleneoxymethylene)] bis(oxirane) and 2-({2-[4-(oxiran-2-ylmethoxy)benzyl]phenoxy}methyl)oxirane).

EC# 701-263-0.

REACH Registration number: 01-2119454392-40-0021

List of exposure scenarios:

- ES1: Formulation or re-packing.
- ES2: Use at industrial sites
- ES3: Use by professional workers
- ES4: Consumer use - Consumer uses

General remarks:

The SpERCs listed below are referenced in the environmental assessments of the individual exposure scenarios.

- CEPE (European Sector Group of the producers and users of paints, printing inks, industrial coatings and artists colors):
 - CEPE 1: Formulation of organic solvent borne coatings and inks-large scale-volatiles (SpERC CEPE 2.1a).
 - CEPE 2: Formulation of organic solvent borne coatings and inks-small scale-volatiles (SpERC CEPE 2.1b).
 - CEPE 3: Formulation of organic solvent borne coatings and inks-solids (SpERC CEPE 2.1c).
 - CEPE 4: Formulation of water borne coatings and inks-large scale-volatiles (SpERC CEPE 2.2a).
 - CEPE 5: Formulation of water borne coatings and inks-small scale-volatiles (SpERC CEPE 2.2b).
 - CEPE 8: Formulation of liquid coatings and inks (where specific use not known)- large scale-volatiles (SpERC CEPE 2.4a).
 - CEPE 9: Formulation of liquid coatings and inks (where specific use not known)- small scale-volatiles (SpERC CEPE 2.4b).
 - CEPE 10: Formulation of liquid coatings and inks (where specific use not known)-solids (SpERC CEPE 2.4c).
 - CEPE 11: Wide dispersive application of decorative coatings, consumers and professionals, indoor use-solvent and volatiles (SpERC CEPE 8a.2a, 8a.1a).
 - CEPE 12: Wide dispersive application of decorative coatings, consumers and professionals, indoor use-solids (SpERC CEPE 8c.2a, 8c.1a).
 - CEPE 13: Wide dispersive application of decorative coatings, consumers and professionals, outdoor use-solvent and volatiles (SpERC CEPE 8d.2a, 8d.1a).
 - CEPE 14: Wide dispersive application of decorative coatings, consumers and professionals, outdoor use-solids (SpERC CEPE 8f.2a, 8f.1a).
 - CEPE 16b: Other spray coating-wide dispersive-volatiles (SpERC CEPE 8a.3a, 8d.3a).
 - CEPE 17a: Other spray coating-point sources-solids (SpERC CEPE 5.1a).
 - CEPE 17b: Other spray coating-wide dispersive-solids (SpERC CEPE 8c.3a.v1, 8f.3a).
 - CEPE 18: Powder spraying (SpERC CEPE 5.2a).
 - BFL/ZKF 2: Vehicle Refinishing-volatiles/solvents (SpERC BFL/ZKF 5.3b).
- ECCA (European trade organization of producers of pre-coated metal):
 - ECCA 2: Industrial coil coating-volatiles (SpERC ECCA 5.1b).
- EMPAC (European Metal Packaging):
 - EMPAC 1: Industrial use of paints and coatings in metal packaging, non-solvents (SpERC EMPAC 5.1).
 - EMPAC 2: Industrial use of paints and coatings in metal packaging, solvents (SpERC EMPAC 5.2).
- EFCC (European Federation for Construction Chemicals):
 - EFCC 1: Volatile substances (main components) for the formulation of construction chemicals (SpERC EFCC 2.1b, 2.1c, 2.2a).
 - EFCC 2: Volatile substances (additives) for the formulation of construction chemicals (SpERC EFCC 2.1b, 2.1c, 2.2a).
 - EFCC 3: Non-volatile substances for the formulation of construction chemicals (SpERC EFCC 2.1a, 2.2b).
 - EFCC 4: Industrial use of volatile substances (main components) in construction chemicals (SpERC EFCC 4.1a).
 - EFCC 5: Industrial use of volatile substances (additives) in construction chemicals (SpERC EFCC 4.1b).
 - EFCC 6: Industrial use of non-volatile substances in construction chemicals (SpERC EFCC 5.1a).
 - EFCC 7: Wide dispersive use of volatile substances in construction chemicals, indoor (SpERC EFCC 8a.1a).
 - EFCC 8: Wide dispersive use of non-volatile substances in construction chemicals, indoor (SpERC EFCC 8c.1a).
 - EFCC 9: Wide dispersive use of volatile substances in construction chemicals, outdoor (SpERC EFCC 8d.1a).
 - EFCC 10: Wide dispersive use of non-volatile substances in construction chemicals, outdoor (SpERC EFCC 8f.1a).
- ESVOC (European Solvents Industry Group / Downstream users of solvents):
 - ESVOC 3: Distribution (SpERC ESVOC 2.2).

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- ESVOC 4: Formulation and packing of preparations and mixtures (SpERC ESVOC 2.2).
- ESVOC 5: Uses in coatings-industrial (SpERC ESVOC 4.3a).
- ESVOC 6: Uses in coatings-professional (SpERC ESVOC 8.3b, 8.3c).
- ESVOC 7: Uses in coatings-consumer (SpERC ESVOC 8.3b, 8.3c).
- ESVOC 24: Use as binders and release agents-industrial (SpERC ESVOC 4.10a).
- ESVOC 25: Use as binders and release agents-professional (SpERC ESVOC 8.10b).
- ESVOC 26: Agrochemical uses-professional (SpERC ESVOC 8.11a, 8.11b).
- ESVOC 36 Road and construction applications-professional (SpERC ESVOC 8.15).
- ESVOC 38: Laboratory reagents-industrial (SpERC ESVOC 2.2).
- ESVOC 39: Laboratory reagents-professional (SpERC ESVOC 8.17).
- ESVOC 42: Rubber production and processing-industrial (SpERC ESVOC 4.19).
- ESVOC 43: Polymer production-industrial (SpERC ESVOC 4.21a).
- ESVOC 44: Polymer production-industrial (SpERC ESVOC 4.21a).
- ESVOC 45: Polymer production-professional (SpERC ESVOC 8.21b).
- FEICA (EU federation of adhesive and sealant manufacturers):
 - FEICA 1: Formulation of solventless/solvent borne adhesives-solids (SpERC FEICA 2.1a).
 - FEICA 2: Formulation of solvent borne adhesives-volatiles-large scale (SpERC FEICA 2.1b).
 - FEICA 3: Formulation of solvent borne adhesives-volatiles-small scale (SpERC FEICA 2.1c).
 - FEICA 4: Formulation of water borne adhesives-volatiles (SpERC FEICA 2.2a).
 - FEICA 5: Formulation of water borne adhesives-solids (SpERC FEICA 2.2b).
 - FEICA 6: Industrial use of substances other than solvents in paper, board and related products (woodworking and joinery, footwear and leather, textile, other adhesives) (SpERC FEICA 5.1a, 5.1c).
 - FEICA 7: Industrial use of substances other than solvents in transportation (automotive/aircraft/rail vehicles)/industrial building construction adhesives (SpERC FEICA 5.1a, 5.1c).
 - FEICA 8: Industrial use of substances other than solvents in paper, board and related products (woodworking and joinery, footwear and leather, textile, other adhesives) (SpERC FEICA 4.2b, 4.1c).
 - FEICA 9: Industrial use of substances other than solvents in transportation (automotive/aircraft/rail vehicles)/industrial building construction adhesives (SpERC FEICA 4.2b, 4.1c).
 - FEICA 10: Wide dispersive use of substances other than solvents in building construction adhesives for indoor application (SpERC FEICA 8c.3).
 - FEICA 11: Wide dispersive use of substances other than solvents in professional and DIY adhesives (SpERC FEICA 8a.3).
 - FEICA 12: Wide dispersive use of solvents in building construction adhesives for indoor application (SpERC FEICA 8a.1a).
 - FEICA 13: Wide dispersive use of solvents in professional and DIY adhesives (SpERC FEICA 8a.3).
 - FEICA 14: Wide dispersive use of substances other than solvents in building construction adhesives for outdoor application (SpERC FEICA 8f.1a).
 - FEICA 15: Wide dispersive use of solvents in building construction adhesives for outdoor application (SpERC FEICA 8d.1a).
- TEGEWA (Federation of the textile chemical industry and German textile industry federation):
 - TEGEWA 3 Textile finishing and coating-residues not retained.

Exposure scenario (1): Formulation or re-packing

1. Exposure scenario (1)

Short title of the exposure scenario:

Formulation or re-packing

List of use descriptors:

Process category (PROC): PROC3, PROC5, PROC9

Environmental release category (ERC): ERC2, ERC3 (CEPE 1-5, 8-10; EFCC 1-3; ESVOC 3-4, 38; FEICA 1-5)

List of names of contributing worker scenarios and corresponding PROCs:

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

Name of contributing environmental scenario and corresponding ERCs:

ERC2 Formulation into mixture.

ERC3 Formulation into solid matrix.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

| | |
|---|---|
| General: | Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately. Local exhaust ventilation and gloves are considered. |
| Product characteristics: | Concentration of substance: Up to 100%. Physical state: liquid. |
| Amounts used: | This information is not relevant for assessment of worker's exposure. |
| Frequency and duration of use/exposure: | Duration: >4 hours/day. |
| Other given operational conditions affecting workers exposure: | Location: Indoor use. Domain: Industrial use. |
| Technical conditions and measures to control dispersion from source towards the worker: | General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: Yes (90% effectiveness). Occupational Health and Safety Management System: Advanced. |
| Conditions and measures related to personal protection, hygiene and health evaluation: | Respiratory protection: Not required. Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic employee training). |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: | Use Local Exhaust ventilation. Chemical resistant protective gloves must be worn. Smoking, eating and drinking are prohibited at the workplace. Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. |

2.2 Control of environmental exposure

| | |
|---|---|
| General: | Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. |
| Amounts used: | Maximum daily use at a site: CEPE 10: 31 kg/day. EFCC 1-3: 32 kg/day. FEICA 1: 3314 kg/day. CEPE 3: 3471 kg/day. FEICA 5: 3473 kg/day. ESVOC 3-4: 83 tons/day. CEPE 1-2, 4-5, 8-9: 111 tons/day. FEICA 2-4: 114 tons/day. ESVOC 38: 920 tons/day. Maximum annual use at a site: CEPE 10; EFCC 1-3: 7 tons/year. FEICA 1: 729 tons/year. FEICA 5: 764 tons/year. CEPE 3: 781 tons/year. ESVOC 38: 18404 tons/year. CEPE 1-2, 4-5, 8-9; ESVOC 3-4; FEICA 2-4: 25000 tons/year. Fraction of the main local source: Unless otherwise stated, calculated. ESVOC 3: 0,002. CEPE 1-5, 8-10: 1. |
| Frequency and duration of use: | Emission days: ESVOC 38: 20 days/year. EFCC 1-3; FEICA 1-5: 220 days/year. CEPE 1-5, 8-10: 225 days/year. ESVOC 3-4: 300 days/year. |
| Environmental factors not influenced by risk management: | Flow rate of receiving surface water: >=18,000 m ³ /day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default). |
| Other given operational conditions affecting environmental exposure: | Indoor use. Industrial use. Release fraction to air from process: EFCC 3: 0.0. ESVOC 3: 0,00001. CEPE 3, 10; FEICA 1,5: 0,000097. CEPE 4, 5; FEICA 4: 0,004. ESVOC 4: 0,005. CEPE 1-2, 8-9; FEICA 2-3: 0,006. EFCC 1-2: 0,01. ESVOC 38: 0,025. Release fraction to wastewater from process: Unless otherwise stated, 0,0. ESVOC 3: 0,00001. CEPE 3; FEICA 1, 5: 0,00005. ESVOC 4: 0,0002. CEPE 10; EFCC 1-3: 0,005. ESVOC 38: 0,02. Release fraction to soil from process: Unless otherwise stated, 0,0. ESVOC 3: 0,00001. ESVOC 4, 38: 0,0001. |

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

Do not apply industrial sludge to natural soils.
 On-site treatment of air: EFCC 1-3; ESVOG 3-4, 38: No treatment of air emission required.
 CEPE 2, 5, 9; FEICA 3, 4: Ensure containment of the emission source to provide a typical removal efficiency of 95%. CEPE 1, 4, 8; FEICA 2: Ensure containment of the emission source to provide a typical removal efficiency of 98%. CEPE 3, 10; FEICA 1, 5: Ensure containment of the emission source to provide a typical removal efficiency of 99%.
 Process efficiency: Process optimized for highly efficient use of raw materials (very minimal environmental release).
 Equipment cleaning: Equipment cleaning with minimized emissions to wastewater.

| | |
|---|--|
| Conditions and measures related to municipal sewage treatment plant: | Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). |
| Conditions and measures related to external treatment of waste for disposal: | External treatment and disposal of waste should comply with applicable local and/or national regulations. |
| Conditions and measures related to external recovery of waste: | External recovery and recycling of waste should comply with applicable local and/or national regulations. |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: | All risk management measures utilised must also comply with all relevant local regulations. |

3. Exposure estimation and reference to its source**Health**

Information for contributing scenario (1): PROC5, PROC9

Assessment method: Worker TRA.

Exposure estimation:

| | <u>Route</u> | <u>Exposure estimate</u> | <u>RCR</u> | <u>Notes</u> |
|-----------------------------|-----------------|--------------------------|------------|--------------|
| Worker, long-term, systemic | Dermal | 0,686 mg/kg bw/day | 0,0066 | PROC9 |
| Worker, long-term, systemic | Inhalation | 6,5 mg/m3 | 0,22 | PROC5, PROC9 |
| Worker, long-term, systemic | Combined routes | N/A | 0,23 | PROC9 |

Environment

Information for contributing scenario (2): ERC3 (CEPE 3, FEICA 1, FEICA 5)

Assessment method: EUSES. Only highest figures are presented here.

Exposure estimation:

| <u>Compartment</u> | <u>PEC</u> | <u>RCR</u> | <u>Notes</u> |
|-------------------------------------|----------------|------------|-----------------|
| Freshwater | 0,00065 mg/L | 0,22 | CEPE 3; FEICA 5 |
| Freshwater sediment | 0,29 mg/kg dw | 0,99 | CEPE 3; FEICA 5 |
| Marine water | 0,000065 mg/L | 0,22 | CEPE 3; FEICA 5 |
| Marine water sediment | 0,029 mg/kg dw | 0,99 | CEPE 3; FEICA 5 |
| Soil | 0 mg/kg | 0 | |
| STP | 0,00657 mg/L | 0,000657 | FEICA 5 |
| Man via environment-Combined routes | N/A | 0,000133 | FEICA 1 |

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

4. Guidance to the Downstream User to evaluate whether he works inside the boundaries set by the ES**Health:**

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Indoor use, LEV used, with gloves, no respirator required. Duration of activity >4 hours. Concentration of substance: Up to 100%.

Environment:

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (2): Use at industrial sites**1. Exposure scenario (2)****Short title of the exposure scenario:**

Use at industrial sites

List of use descriptors:

Sector of use category (SU): SU12, SU15, SU16, SU17, SU19

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Process category (PROC): PROC2, PROC3, PROC5, PROC6, PROC7, PROC9

Environmental release category (ERC): ERC6a, ERC6d (CEPE 17a, 18; ECCA 2; EFCC 4-6; EMPAC 1-2; ESVOG 5, 24, 38; 42-44; FEICA 6-9; TEGEWA 3; BFL/ZKF 2).

List of names of contributing worker scenarios and corresponding PROCs:

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

PROC5 Mixing or blending in batch processes. Covers mixing or blending of solid or liquid materials in the context of manufacturing or formulating sectors, as well as upon end use.

PROC6 Calendering operations. Processing of large surfaces at elevated temperature e.g. calendering of textile, rubber or paper.

PROC7 Industrial spraying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders.

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing). Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage.

Name of contributing environmental scenario and corresponding ERCs:

ERC6a Use of intermediate.

ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure**2.1 Control of workers exposure**

| | |
|---|---|
| General: | Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately. Local exhaust ventilation and gloves are considered. PROC7: Wear a respirator conforming to EN140 with Type A/P2 filter or better (Effectiveness Inhalation: 90%). |
| Product characteristics: | Concentration of substance: Up to 100%. Physical state: liquid. |
| Amounts used: | This information is not relevant for assessment of worker's exposure. |
| Frequency and duration of use/exposure: | Duration: >4 hours/day. |
| Other given operational conditions affecting workers exposure: | Location: Indoor use. Domain: Industrial use. |
| Technical conditions and measures to control dispersion from source towards the worker: | General ventilation: Basic general ventilation (1-3 air changes per hour): 0%. Local exhaust ventilation: PROC2: Not required. PROC3, PROC5, PROC6, PROC7, PROC9: Yes (90% effectiveness). Occupational Health and Safety Management System: Advanced. |
| Conditions and measures related to personal protection, hygiene and health evaluation: | Respiratory protection: PROC7: Wear a respirator conforming to EN140 with Type A/P2 filter or better (Effectiveness Inhalation: 90%). PROC2, PROC3, PROC5, PROC6, PROC9: Not required. Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic employee training). |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: | Use Local Exhaust ventilation. Chemical resistant protective gloves must be worn. Smoking, eating and drinking are prohibited at the workplace. Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. |
| 2.2 Control of environmental exposure | |
| General: | Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. |

Amounts used:

Maximum daily use at a site: TEGEWA 3: 0,9 kg/day. BFL/ZKF 2: 2736 kg/day. EMPAC 2: 2977 kg/day. ESVOC 5, 42-44: 83 tons/day. CEPE 17a, 18; ECCA 2; EMPAC 1; EFCC 4-6; FEICA 6-9: 114 tons/day. ESVOC 24: 250 tons/day. ESVOC 38: 920 tons/day.

Maximum annual use at a site: TEGEWA 3: 0,19 tons/year. EMPAC 2: 655 tons/year. BFL/ZKF 2: 684 tons/year. ESVOC 38: 18404 tons/year. CEPE 17a, 18; ECCA 2; EMPAC 1; EFCC 4-6; ESVOC 5, 24, 42-44; FEICA 6-9: 25000 tons/year.

Fraction of the main local source: Unless otherwise stated, calculated. BFL/ZKF 2: 0,002. CEPE 17a, 18; TEGEWA 3: 1.

| | |
|--|---|
| Frequency and duration of use: | Emission days: ESVOC 38: 20 days/year. ESVOC 24: 100 days/year. CEPE 17a, 18; ECCA 2; EMPAC 1-2; EFCC 4-6; FEICA 6-9; TEGEWA 3: 220 days/year. BFL/ZKF 2: 250 days/year. ESVOC 5, 42-44: 300 days/year. |
| Environmental factors not influenced by risk management: | Flow rate of receiving surface water: >=18,000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default). |
| Other given operational conditions affecting environmental exposure: | Indoor use. Industrial use. Release fraction to air from process: TEGEWA 3: 0,001. ESVOC 43: 0,002. FEICA 6: 0,009. EMPAC 1; EFCC 6; FEICA 7: 0,017. CEPE 18; ESVOC 44: 0,02. CEPE 17a: 0,022. ESVOC 38: 0,025. ESVOC 5: 0,098. ESVOC 42: 0,01. ECCA 2: 0,12. ESVOC 24; FEICA 8-9: 0,2. BFL/ZKF 2: 0,968. EFCC 4-5: 0,985. EMPAC 2: 1,00. Release fraction to wastewater from process: Unless otherwise stated, 0,0. ESVOC 24: 0,000003. ESVOC 42-43: 0,0003. ESVOC 5: 0,0007. ESVOC 38: 0,02. BFL/ZKF 2: 0,03. TEGEWA 3: 0,2. Release fraction to soil from process: Unless otherwise stated, 0,0. ESVOC 44: 0,00001. ESVOC 38, 42-43: 0,0001. |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil: | Do not apply industrial sludge to natural soils. On-site treatment of air: BFL/ZKF 2; EMPAC 1-2; EFCC 4-6; ESVOC 5, 24, 38, 42-44; FEICA 6-7; TEGEWA 3: No treatment of air emission required. CEPE 17a: Wet scrubber or filtration to provide a typical removal efficiency of 95%. CEPE 18: Cyclone and/or filter to provide a typical removal efficiency of 95%. ECCA 2: Incineration. FEICA 8-9: Treat air emission to provide a typical removal efficiency of 80% (e.g. waste gas treatment, adsorption, incineration, etc.). Process efficiency: Process optimized for highly efficient use of raw materials (very minimal environmental release). Equipment cleaning: Equipment cleaning with minimized emissions to wastewater. |
| Conditions and measures related to municipal sewage treatment plant: | Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). |
| Conditions and measures related to external treatment of waste for disposal: | External treatment and disposal of waste should comply with applicable local and/or national regulations. |
| Conditions and measures related to external recovery of waste: | External recovery and recycling of waste should comply with applicable local and/or national regulations. |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: | All risk management measures utilised must also comply with all relevant local regulations. |

3. Exposure estimation and reference to its source**Health**

Information for contributing scenario (1): PROC2, PROC7

Assessment method: Worker TRA. Only highest figures are presented here.

Exposure estimation:

| | Route | Exposure estimate | RCR | Notes |
|-----------------------------|-----------------|--------------------------|------------|--------------|
| Worker, long-term, systemic | Dermal | 2,14 mg/kg bw/day | 0,0206 | PROC7 |
| Worker, long-term, systemic | Inhalation | 13 mg/m3 | 0,442 | PROC2 |
| Worker, long-term, systemic | Combined routes | N/A | 0,455 | PROC2 |

Environment

Information for contributing scenario (2): ERC6a, ERC6d (CEPE 18; ECCA 2; ESVOC 24, 38, 43-44; TEGEWA 3)

Assessment method: EUSES. Only highest figures are presented here.

Exposure estimation:

| Compartment | PEC | RCR | Notes |
|--------------------|------------|------------|--------------|
|--------------------|------------|------------|--------------|

| Compartment | PEC | RCR | Notes |
|-------------------------------------|----------------|------------|---------------------|
| Freshwater | 0,00065 mg/L | 0,22 | CEPE 18; ESVOC 44 |
| Freshwater sediment | 0,29 mg/kg dw | 0,99 | CEPE 18; ESVOC 44 |
| Marine water | 0,000065 mg/L | 0,22 | ESVOC 24, 38, 43-44 |
| Marine water sediment | 0,029 mg/kg dw | 0,99 | ESVOC 24, 38, 43-44 |
| Soil | 0 mg/kg dw | 0 | |
| STP | 0,0065 mg/L | 0,00065 | ECCA 2; TEGEWA 3 |
| Man via environment-Combined routes | N/A | 0,00106 | ESVOC 24 |

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

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

| | |
|---------------------|--|
| Health: | Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Respiratory protection: PROC7: Wear a respirator conforming to EN140 with Type A/P2 filter or better. PROC2, PROC3, PROC 5, PROC6, PROC9: Not required. Indoor use, LEV used, with gloves. Duration of activity >4 hours. Concentration of substance: Up to 100%. |
| Environment: | Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required. |

Exposure scenario (3): Use by professional workers

1. Exposure scenario (3)

Short title of the exposure scenario:

Use by professional workers

List of use descriptors:

Sector of use category (SU): SU12, SU13, SU15, SU16, SU17, SU19

Process category (PROC): PROC2, PROC8a, PROC10, PROC11, PROC19

Environmental release category (ERC): ERC8b, ERC8e (BFL/ZKF 2; CEPE 11-14, 16b, 17b; EFCC 7-10; ESVOC 6, 25, 26, 36, 39, 45; FEICA 10-15; TEGEWA 3).

List of names of contributing worker scenarios and corresponding PROCs:

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities. Transfer includes loading, filling, dumping, bagging and weighing.

PROC10 Roller application or brushing. This includes application of paints, coatings, removers, adhesives or cleaning agents to surfaces with potential exposure arising from splashes.

PROC11 Non industrial spraying. Air dispersive techniques i.e. dispersion into air (= atomization) by e.g. pressurized air, hydraulic pressure or centrifugation, applicable for liquids and powders.

PROC19 Manual activities involving hand contact. Addresses tasks, where exposure of hands and forearms can be expected; no dedicated tools or specific exposure controls other than PPE can be put in place.

Name of contributing environmental scenario and corresponding ERCs:

ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor).

ERC8e Widespread use of reactive processing aid (no inclusion into or onto article, outdoor).

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment, Chapter R.12: Use descriptor system (http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_r12_en.pdf). For further information on CEFIC (The European Chemical Industry Council) Specific Environmental Release Categories (SpERCs), see <http://www.cefic.org/Industry-support/Implementing-reach/Libraries/>.

2. Conditions of use affecting exposure

2.1 Control of workers exposure

| | |
|--|---|
| General: | Generally accepted standards of occupational hygiene are maintained. Smoking, eating and drinking are prohibited at the workplace. Spills are cleaned immediately. Local exhaust ventilation and gloves are considered. PROC8a, PROC10, PROC11, PROC 19: Wear a respirator conforming to EN140 with Type A/P2 filter or better (Effectiveness Inhalation: 90%). |
| Product characteristics: | Concentration of substance: Up to 100%. Physical state: liquid. |
| Amounts used: | This information is not relevant for assessment of worker's exposure. |
| Frequency and duration of use/exposure: | Duration: >4 hours/day. |

| | |
|--|--|
| Other given operational conditions affecting workers exposure: | Location: Indoor/outdoor use. Domain: Professional use. |
| Technical conditions and measures to control dispersion from source towards the worker: | General ventilation: Basic general ventilation (1-3 air changes per hour): 0% (indoor use). Outdoors (outdoor use). Local exhaust ventilation: Yes (90% effectiveness)(indoor use). Occupational Health and Safety Management System: Basic. |
| Conditions and measures related to personal protection, hygiene and health evaluation: | Respiratory protection: PROC8a, PROC10, PROC11, PROC19: Wear a respirator conforming to EN140 with Type A/P2 filter or better (Effectiveness Inhalation: 90%). PROC2: Not required. Dermal protection: Yes (chemically resistant gloves conforming to EN374 with basic employee training). |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: | Use Local Exhaust ventilation. Chemical resistant protective gloves must be worn. Smoking, eating and drinking are prohibited at the workplace. Generally accepted standards of occupational hygiene are maintained. Minimisation of manual phases/work tasks. Minimisation of splashes and spills. Avoidance of contact with contaminated tools and objects. Regular cleaning of equipment and work area. Training staff on good practice. Management/supervision in place to check that RMMs in place are being used correctly and OCs followed. |
| 2.2 Control of environmental exposure | |
| General: | Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. |
| Amounts used: | Daily wide dispersive use: TEGEWA 3: 0,9 kg/day. ESVOC 39: 159 kg/day. BFL/ZKF 2: 2736 kg/day. ESVOC 25: 3082 kg/day. CEPE 16b: 3978 kg/day. FEICA 10, 14: 5370 kg/day. ESVOC 26: 5734 kg/day. ESVOC 36: 6789 kg/day. EFCC 10: 6918 kg/day. ESVOC 6, 45: 7510 kg/day. CEPE 13: 7647 kg/day. CEPE 11: 7786 kg/day. EFCC 7,9; FEICA 12,15: 7789 kg/day. CEPE 14: 7899 kg/day. EFCC 8: 8057 kg/day. CEPE 12: 8077 kg/day. FEICA 11: 8951 kg/day. CEPE 17b; FEICA 13: 68 tons/day. Fraction of the main local source: Unless otherwise stated, 0,002. TEGEWA 3: 1. |
| Frequency and duration of use: | Emission days: TEGEWA 3: 220 days/year. BFL/ZKF 2: 250 days/year. CEPE 11-14, 16b, 17b; EFCC 7-10; ESVOC 6, 25-26, 36, 39, 45; FEICA 10-15: 365 days/year. Wide dispersive use. |
| Environmental factors not influenced by risk management: | Flow rate of receiving surface water: >=18,000 m3/day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default). |
| Other given operational conditions affecting environmental exposure: | Indoor/Outdoor use. Professional use. Release fraction to air from process: CEPE 12, 14; EFCC 8, 10; FEICA 10-11, 14: 0,0. TEGEWA 3: 0,001. CEPE 17b: 0,022. ESVOC 39: 0,5. ESVOC 26: 0,9. ESVOC 25, 36: 0,95. BFL/ZKF 2: 0,968. CEPE 16b; EFCC 7, 9; ESVOC 6, 45; FEICA 12, 15: 0,98. CEPE 13; EFCC 4-5; FEICA 13: 0,985. CEPE 11: 0,99. Release fraction to wastewater from process: CEPE 17b; FEICA 13: 0,0. FEICA 11: 0,009. CEPE 11-14; EFCC 7-10; ESVOC 6, 26, 36, 45; FEICA 12, 15: 0,01. FEICA 10, 14: 0,015. CEPE 16b: 0,02. ESVOC 25: 0,025. BFL/ZKF 2: 0,03. TEGEWA 3: 0,2. ESVOC 39: 0,5. Release fraction to soil from process: Unless otherwise stated, 0,0. CEPE 13, 14: 0,005. EFCC 10: 0,037. ESVOC 6, 45: 0,01. ESVOC 25: 0,025. ESVOC 36: 0,04. ESVOC 26: 0,09. |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil: | Do not apply industrial sludge to natural soils. On-site treatment of air: BFL/ZKF 2; CEPE 11-14; EFCC 7-10; ESVOC 6, 25-26, 36, 39, 45; FEICA10-15; TEGEWA 3: No treatment of air emission required. CEPE 16b, 17b: Wet scrubber or filtration to provide a typical removal efficiency of 95%. Process efficiency: Process optimized for highly efficient use of raw materials (very minimal environmental release). Equipment cleaning: Equipment cleaning with minimized emissions to wastewater. |
| Conditions and measures related to municipal sewage treatment plant: | Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: >=2000 m3/day (standard town). |

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| Conditions and measures related to external treatment of waste for disposal: | External treatment and disposal of waste should comply with applicable local and/or national regulations. |
| Conditions and measures related to external recovery of waste: | External recovery and recycling of waste should comply with applicable local and/or national regulations. |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: | All risk management measures utilised must also comply with all relevant local regulations. |

3. Exposure estimation and reference to its source

Health

Information for contributing scenario (1): PROC11, PROC19

Assessment method: Worker TRA. Only highest figures are presented here.

Exposure estimation:

| | <u>Route</u> | <u>Exposure estimate</u> | <u>RCR</u> | <u>Notes</u> |
|-----------------------------|-----------------|--------------------------|------------|--------------|
| Worker, long-term, systemic | Dermal | 14,1 mg/kg bw/day | 0,14 | PROC19 |
| Worker, long-term, systemic | Inhalation | 26 mg/m ³ | 0,88 | PROC11 |
| Worker, long-term, systemic | Combined routes | N/A | 0,91 | PROC11 |

Environment

Information for contributing scenario (2): ERC8b, ERC8e (CEPE 16b; ESVOC 25, 26, 36; FEICA 10-14; TEGEWA 3)

Assessment method: EUSES. Only highest figures are presented here.

Exposure estimation:

| <u>Compartment</u> | <u>PEC</u> | <u>RCR</u> | <u>Notes</u> |
|-------------------------------------|----------------|------------|----------------------------|
| Freshwater | 0,00065 mg/L | 0,22 | ESVOC 25; FEICA 10-11, 14 |
| Freshwater sediment | 0,29 mg/kg dw | 0,99 | ESVOC 25; FEICA 10-11, 14 |
| Marine water | 0,000065 mg/L | 0,22 | ESVOC 25; FEICA 12, 14 |
| Marine water sediment | 0,029 mg/kg dw | 0,99 | ESVOC 25; FEICA 12, 14 |
| Soil | 0 mg/kg dw | 0 | |
| STP | 0,006 mg/L | 0,0006 | FEICA 10, 11, 14; TEGEWA 3 |
| Man via environment-Combined routes | N/A | 0,0004 | ESVOC 26, 36; FEICA 13 |

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

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

Health:

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Respiratory protection: PROC8a, PROC10, PROC11, PROC19: Wear a respirator conforming to EN140 with Type A/P2 filter or better. PROC2: Not required. Indoor/outdoor use, LEV used (indoor use), with gloves. Duration of activity >4 hours. Concentration of substance: Up to 100%.

Environment:

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure scenario (4): Consumer use - Consumer uses

1. Exposure scenario (4)

Short title of the exposure scenario:

Consumer use - Consumer uses

List of use descriptors:

Product category (PC): PC9a, PC9b

Environmental release category (ERC): ERC8b, ERC8e (BFL/ZKF 2; CEPE 11-14; EFCC 7-10; ESVOC 7; FEICA 10-15).

Name of contributing environmental scenario and corresponding ERCs:

ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor).

ERC8e Widespread use of reactive processing aid (no inclusion into or onto article, outdoor).

Further explanations:

PC9a Coatings and paints, thinners, paint removers: Water borne latex wall paint (non-spray); Solvent rich, high solid, water borne paint (non-spray).

PC9b Fillers, putties, plasters, modelling clay: Fillers and putty; Plasters and floor equalizers.

For further information on standardized use descriptors see the European Chemical Agency (ECHA) Guidance on information requirements and chemical safety assessment,

2. Conditions of use affecting exposure**2.1 Control of consumer exposure**

| | |
|---|---|
| Product characteristics: | Concentration of substance in product: PC9a (Water borne latex wall paint): Up to 0,48%. PC9a (Solvent rich, high solid, water borne paint): Up to 0,8%. PC9b (Fillers and putty): Up to 1,3%. PC9b (Plasters and floor equalizers): Up to 0,26%. Physical state: liquid. |
| Amounts used: | Applied amounts for each use event: PC9a (Water borne latex wall paint): 36 g. PC9a (Solvent rich, high solid, water borne paint): 21,2 g. PC9b (Fillers and putty): 13,2 g. PC9b (Plasters and floor equalizers): 65,9 g. |
| Other given operational conditions affecting consumers exposure: | Location: Indoor/outdoor use. |

2.2 Control of environmental exposure

| | |
|--|---|
| General: | All risk management measures utilised must also comply with all relevant local regulations. |
| Amounts used: | Daily wide dispersive use: BFL/ZKF 2: 2736 kg/day. FEICA 10, 14: 5370 kg/day. EFCC 10: 6918 kg/day. CEPE 13; ESVOG 7: 7647 kg/day. CEPE 11: 7786 kg/day. EFCC 7,9; FEICA 12,15: 7789 kg/day. CEPE 14: 7899 kg/day. EFCC 8: 8057 kg/day. CEPE 12: 8077 kg/day. FEICA 11: 8951 kg/day. FEICA 13: 68 tons/day. Fraction of the main local source: 0,002. |
| Frequency and duration of use: | Emission days: BFL/ZKF 2: 250 days/year. CEPE 11-14; EFCC 7-10; ESVOG 7; FEICA 10-15: 365 days/year. Wide dispersive use. |
| Environmental factors not influenced by risk management: | Flow rate of receiving surface water: $\geq 18,000$ m ³ /day (default). Local freshwater dilution factor: 10 (default). Local marine water dilution factor: 100 (default). |
| Other given operational conditions affecting environmental exposure: | Indoor/Outdoor use. Consumer use. Release fraction to air from process: CEPE 12, 14; EFCC 8, 10; FEICA 10-11, 14: 0,0. BFL/ZKF 2: 0,968. EFCC 7, 9; FEICA 12,15: 0,98. CEPE 13; ESVOG 7; FEICA 13: 0,985. CEPE 11: 0,99. Release fraction to wastewater from process: FEICA 13: 0,0. FEICA 11: 0,009. CEPE 11-14; EFCC 7-10; ESVOG 7; FEICA 12, 15: 0,01. FEICA 10, 14: 0,015. BFL/ZKF 2: 0,03. Release fraction to soil from process: Unless otherwise stated, 0,0. CEPE 13, 14; ESVOG 7: 0,005. EFCC 10: 0,037. |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil: | No treatment of air emission required. |
| Conditions and measures related to municipal sewage treatment plant: | Municipal Sewage Treatment Plant (STP): Yes (freshwater). Size of municipal sewage system/treatment plant: ≥ 2000 m ³ /day (standard town). |
| Conditions and measures related to external treatment of waste for disposal: | External treatment and disposal of waste should comply with applicable local and/or national regulations. |
| Conditions and measures related to external recovery of waste: | External recovery and recycling of waste should comply with applicable local and/or national regulations. |
| Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply: | All risk management measures utilised must also comply with all relevant local regulations. |

3. Exposure estimation and reference to its source**Health**

Information for contributing scenario (1): PC9a: Water borne latex wall paint; Solvent rich, high solid, water borne paint.

Assessment method: CHESAR Consumer TRA. Only highest figures are presented here.

Exposure estimation:

| | Route | Exposure estimate | RCR | Notes |
|-------------------------------|-----------------|--------------------------|------------|--|
| Consumer, long-term, systemic | Dermal | 0,572 mg/kg bw/day | 0,915 | PC9a (Solvent rich, high solid, water borne paint) |
| Consumer, long-term, systemic | Inhalation | 8,64 mg/m ³ | 0,993 | PC9a (Water borne latex wall paint) |
| Consumer, long-term, systemic | Combined routes | N/A | 0,998 | PC9a (Water borne latex wall paint) |

Environment

SDS Name: EPALLOY* 8370

Information for contributing scenario (2): ERC8b, ERC8e (EFCC 10; FEICA 10-15)

Assessment method: EUSES. Only highest figures are presented here.

Exposure estimation:

| Compartment | PEC | RCR | Notes |
|-------------------------------------|----------------|------------|-----------------------|
| Freshwater | 0,00065 mg/L | 0,22 | FEICA 10, 11, 14 |
| Freshwater sediment | 0,29 mg/kg dw | 0,99 | FEICA 10, 11, 14 |
| Marine water | 0,000065 mg/L | 0,22 | EFCC 10; FEICA 12, 15 |
| Marine water sediment | 0,029 mg/kg dw | 0,99 | EFCC 10; FEICA 12, 15 |
| Soil | 0 mg/kg | 0 | |
| STP | 0,006 mg/L | 0,0006 | FEICA 10, 11, 14 |
| Man via environment-Combined routes | N/A | 0,0004 | FEICA 13 |

RCR=Risk characterization ratio (PEC/PNEC or Exposure estimate/DNEL); PEC=Predicted environmental concentration.

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

Health: Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment: Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.