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

1.1. Product identifier

Name of the product: **CHS-EPOXY 520 (SDS for US market)**

Product identifier: Bis-[4-(2,3-epoxipropoxi)phenyl]propane

Registration Number of the substance: 01-2119456619-26-0018

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

Identified uses: ES01:Industrial: Manufacture
ES1: Industrial: Formulation/Blending/Reaction
ES2: Professional: Formulation/Blending/Reaction
ES3: Industrial: Coating Application
ES4: Professional: Coating Application
ES5: Industrial: Tooling and Casting
ES6: Professional: Tooling and Casting
ES7: Consumer Use

Uses advised against: There are no uses advised against identified.

1.3. Details of the supplier of the safety data sheet

Company/undertaking:

Spolek pro chemickou a hutní výrobu, akciová společnost
Revoluční 1930/86, Ústí nad Labem 400 32, Czech Republic
Tel: +420 477 161 111 Fax.: +420 477 163 333
Responsible person: msds@spolchemie.cz

1.4. Emergency telephone number

CZ: +420 477 162 094/ EN: +420 476 163 111 non-stop service
Listing of national helpdesks at: http://echa.europa.eu/help/nationalhelp_contact_en.asp.

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Skin Irrit. 2: H315
Skin Sens. 1: H317
Eye Irrit. 2: H319
Aquatic Chronic 2: H411

Hazards to man and the environment: Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation.Toxic to aquatic life with long lasting effects.

Full text of classification and text of H, EUH and P - Phrases is listed in section 16 this SDS.

2.2. Label elements

WARNING

Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. Toxic to aquatic life with long lasting effects.
Do not get in eyes, on skin, or on clothing. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection. IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

CAS: 1675-54-3 **Index:** 603-073-00-2

Contents: Bis-[4-(2,3-epoxipropoxi)phenyl]propane
Obligatory phrasing: Not determined.

2.3. Other hazards

PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulative non toxic (PBT).

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Identifier	CAS/ EINECS/ Registration number	Classification 1272/2008/ES	Content %	Note
Bis-[4-(2,3-epoxipropoxi)phenyl]propane	1675-54-3/ 216-823-5/ 01-2119456619-26-0018	Skin Irrit.2: H315, Skin Sens.1: H317, Eye Irrit.2: H319, Aquatic Chronic 2: H411	100	SCL

Full text of classification and text of H, EUH and P - Phrases is listed in section 16 this SDS.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
In a life threatening condition soon carry out resuscitation affected and seek medical advice.
Respiratory arrest: immediately administer artificial respiration.
Cardiac arrest: immediately perform indirect heart massage.
Unconsciousness: place patient in recovery position.

After inhalation: Interrupt exposure source immediately and remove victim to fresh air. Remove contaminated clothing, protect the victim against cold. Get medical attention, especially if persists cough, breathlessness or other symptoms.

After skin contact: Take off contaminated clothing, wash the area with plenty of lukewarm water, if there was no injury to the skin, it is possible to use soap, soap or shampoo, get medical attention, especially if persists skin irritation.

After eye contact: Immediately flush eyes with running water, open the eyelids (even violence); If a victim has contact lenses, remove them immediately, rinse for at least 10 minutes and get medical, professional treatment if possible.

After ingestion: DO NOT INDUCE VOMITING - i alone induced vomiting can cause complications. If possible, give activated charcoal in an amount of 5 crushed tablets, obtain medical attention.

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

No effect known.

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

See point 4.1

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Water fog, dry chemical media, carbon dioxide, foam.

Extinguishing media to be avoided: High pressure water jet.

5.2. Special hazards arising from the substance or mixture

Burning produces oxides of carbon, aldehydes, acids and unidentified mixtures of organic compounds.

5.3. Advice for firefighters

Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Protective clothing including eye, respiratory passages and hand protection.

6.2. Environmental precautions

Avoid release of product or components to the environment, sewers and surface water or soil.

6.3. Methods and material for containment and cleaning up

Dam up spilled product, contain with inert material (e. g. kieselguhr, sand). Place into an impervious container and dispose of at hazardous chemical waste collection point or incinerate in a furnace where permitted under local regulations.

6.4. Reference to other sections

Additional advice : Refer to section 8, 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Observe working instructions. Ensure good ventilation and local exhaustion at the workplace. When using do not eat, drink or smoke.

7.2. Conditions for safe storage, including any incompatibilities

Store in closed storerooms. Keep away from sources of ignition and other kinds of substances. Store in the original containers kept tightly closed. Storerooms should be well-ventilated, dry, provided with a source of drinking water supply. Storage temperature should be kept between +5 and +25 °C. Prevent access of unauthorised personnel.

7.3. Specific end use(s)

See exposure scenario.

SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1. Control parameters

Bis-[4-(2,3-epoxipropoxi)phenyl]propane :
DNELs - workers:
Long - term - systemic effects: inhalat: 12.25 mg/m³
Acute - systemic effects: inhalat: 12.25 mg/m³
Long - term - systemic effects: dermal: 8.33 mg/kg bw/day
Acute - systemic effects: dermal: 8.33 mg/kg bw/day
DNELs - general population:
Long - term - systemic effects: dermal: 3.571 mg/kg bw/day
Acute - systemic effects: dermal: 3.571 mg/kg bw/day
Long - term - systemic effects: oral: 0.75 mg/kg bw/day
Acute - systemic effects : oral: 0.75 mg/kg bw/day

Bis-[4-(2,3-epoxipropoxi)phenyl]propane:
PNECs:
Sewage treatment plants: 10 mg/l (assessment factor:10)
Freshwater: 0.006 mg/l (assessment factor:50)
Freshwater sediment: 0.9960 mg/kg
Marine water: 0.0006 mg/l (assessment factor:500)
Marine water sediment: 0.0996 mg/kg
Intermitent releases: 0.018 mg/l (assessment factor:100)
Soil: 0.196 mg/kg
Oral: 11mg/kg food (assessment factor:90)

8.2. Exposure controls

8.2.1 Appropriate engineering controls

Local exhaustion recommended.

8.2.2 Occupational exposure controls

Respiratory protection: Use a mask with filter for acid gases, if higher concentrations (above the permissible limit) may occur.
Hand protection: Chemically resistant gloves (tested to EN374).
Eye / face protection: Safety goggles or safety shield.
Skin protection: Twilled fabric clothing, footwear.

8.2.3 Environmental exposure controls

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State:	Liquid (at 20°C and 1013 hPa)
Colour:	Yellowish to yellow, clear.
Odour:	Slight characteristic.
pH:	Not determined.
Boiling point / boiling range (ºC):	> 280
Melting point / freezing point (°C):	Not applicable.
Flash point (°C):	266
Flammability (solid, gas):	Not applicable.
Explosive properties:	Not explosive.
Oxidising properties:	Not determined.
Vapour pressure:	0.000000046 Pa at 25°C
Density (g/cm³):	1,16 (20°C)
Solubility:	Not determined.
Water solubility (g/l):	6,9 mg/L (20 °C)
Partition coefficient: n-octanol/water:	Log Kow (Pow):3.242 at 25 °C
Auto-ignition temperature (°C):	> 460
Viscosity:	12,0 - 14,5 Pas
Vapour density:	Not determined.
Evaporation rate:	Not determined.
Other information:	Not determined.

9.2. Other information

Miscibility:	Soluble in acetone.
Fat solubility (oil to be specified):	Not miscible.
Conductivity:	Not determined.
Gas group:	Not determined.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

With normal use no dangerous reaction.

10.2. Chemical stability

Stable under recommended conditions of storage and handling of the product.

10.3. Possibility of hazardous reactions

Polymerization.

10.4. Conditions to avoid

Elevated temperature.

10.5. Incompatible materials

Strong oxidising materials, strong Lewis or mineral acids, strong mineral and organic bases.

10.6. Hazardous decomposition products

Oxides of carbon, aldehydes, acids and unidentified mixtures of organic compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity:	LD50(oral) : 15000 mg/kg bw LD50(dermal): 23000 mg/kg bw
Skin corrosion/irritation:	Irritating.
Serious eye damage/irritation:	Irritating.
Respiratory or skin sensitisation:	May cause sensitisation by skin contact.
Mutagenicity:	Negative in vivo assays.
Carcinogenicity:	Oral NOAEL: 15 mg/kg bw/day - Target organs: digestive: cecum Dermal NOAEL: 1 mg/kg bw/day - Target organs: digestive: liver
Reproductive toxicity:	Fertility: oral: NOAEL: 750 mg/kg bw/day Developmental: oral: NOAEL: 180 mg/kg bw/day Developmental: dermal: NOAEL: 300 mg/kg bw/day
STOT- single exposure:	Based on available data, the classification criteria are not met.
STOT- repeated exposure:	Oral NOAEL: 50 mg/kg bw/day - Target organs: digestive: cecum; glandular: adrenal gland; urogenital: kidneys Dermal NOAEL: 100 mg/kg bw/day
Aspiration hazard:	Based on available data, the classification criteria are not met.

Other information

Inclusion of substance on the basis of the above test results:
Irritating to the skin - Category 2, irritating to the eyes - Category 2, sensitizing skin - Category 1

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

LC 50 (96 h, fish): 2 mg/L (Oncorhynchus mykiss)
EC 50 (48 h, dafnia): 1,8 mg/L (NOEC: 0,3 mg/L) (Daphnia magma)
EC 50 (72 h, algae): 11 mg/L (NOEC: 4,2 mg/L) (Scenedesmus capricornutum)

Other hazards: Inclusion of substance on the basis of the above test results: Dangerous for the environment chronically - Category 2.
Water hazard classification: WGK 2

12.2. Persistence and degradability

The product is with difficulty biodegradable.

12.3. Bioaccumulative potential

BCF: 31
Log Kow (Pow):3 ,242 at 25 °C

12.4. Mobility in soil

Koc: 445 at 20°C

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulative non toxic (PBT).

12.6. Other adverse effects

No effect known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Uncured residues (waste of category N, waste code 08 04 09) should be placed into impervious containers and disposed of by incineration in a suitable unit for disposal of industrial waste; cured residues (waste of category O, waste code 08 04 10) should by placed into impervious containers and rendered harmless either by combustion in suitable incinerators for industrial waste, or disposed of at a licensed waste disposal facility.

Waste of category N, waste type code 15 01 10. Properly emptied packagings should be disposed of like scrap iron. When treating empty

containers, do not use processes applying naked flames (gas welding).
Handling with wastes is regulated by Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number: -

14.2. UN proper shipping name:

ADR/RID: Not classified as dangerous goods under ADR/RID.
IMDG: Not classified as dangerous goods under IMDG.

14.3. Transport hazard class(es): -

14.4. Packing group: -

14.5. Environmental hazards

ADR/RID: No.
IMDG: No.

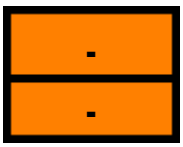
14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

Other information



Classification code: -
Note: FOR US MARKET ONLY
Tunnel restriction codes: -
EmS: -

SECTION 15: REGULATORY INFORMATION

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

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration,Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, as amended.

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC)No 1907/2006, as amended.

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods.

Other regulatory information:

Not determined.

15.2. Chemical safety assessment

The chemical safety report has been prepared.

SECTION 16: OTHER INFORMATION

Full wording of H, EUH, P - Phrases

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H411 Toxic to aquatic life with long lasting effects.
P262 Do not get in eyes, on skin, or on clothing.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Used abbreviations

Aquatic Chronic 2: Hazardous to the aquatic environment — Chronic hazard category 2
Eye Irrit. 2: Eye irritation, hazard category 2
Skin Irrit. 2: Skin irritation, hazard category 2
Skin Sens. 1: Skin sensitization, hazard category 1
SCL: Substance with Specific concentration Limit
PNEC: Predicted no-effect concentration
DNEL: Derived no-effect level
WGK: Wassergefährdungsklasse (water hazard class)
NOEC: No Observed Effect Concentration
NOEL: No observed effect level
PBT: Persistent, bioaccumulative and toxic substance.
vPvB: Very persistent and very bioaccumulative substance
bw: Body weight

Classification methods

Not relevant - substance.

Sources of data

The registration dossier.

Additional information

CAS Number(1) 1675-54-3
Europe EINECS NLP # 216-823-5
United States TSCA 1675-54-3
Canada DSL 1675-54-3
Australia AICS 1675-54-3
Philippines PICCS 1675-54-3
China IECSC 1675-54-3

The substance has specific concentration limits (SCL):
Eye Irrit. 2; H319: C ≥5%
Skin Irrit. 2; H315: C ≥ 5%

Training guidelines

Those who manipulate with the product must be demonstrably informed of its dangerous properties, principles of protecting the environment and health from its harmful effects and principles of first aid.

Revision data

17.12.2010 Changes made in accordance with Regulation (EC) No 1272/2008 and Regulation (EC) No 453/2010

08.10.2015 Removed classification according to Directive 67/548 / EEC (DSD), information in section 4. added, extended format of SDS (e-SDS).
08.10.2018 The change in the identification of the main ingredient.

1.TITLE OF THE EXPOSURE SCENARIO: ES1: Industrial: Formulation/Blending/Reaction

Sector of use:	SU3, SU8, SU10
Product category:	PC19, PC32
Process category:	PROC3, PROC4, PROC5, PROC8b, PROC9
Article category:	Not applicable.
Environmental relase category:	ERC2, ERC6a Specifiek environmental release category CEPE3
Processes, task, activities covered:	Covers the formulation and blending in an industrial setting including transfers of preparation from/to large vessels, use in closed processes, blending and mixing, laboratory use, reaction of monomers to polymers, post-processing, waste collecting, and maintenance.

2. OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

2.1. Control of worker exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 100%

Operational conditions:

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Contributing scenario:

ES1-W1: (Un)loading; Receipt and storage of raw materials. PROC8b
ES1-W2: Formulation; Blending/dissolving/dispersion: mixing, milling, dispersing, completion. PROC3
ES1-W3: Quality Control: Laboratory use: QC laboratory use. PROC5
ES1-W4: End Use: reaction of monomers to polymer. PROC3
ES1-W5: Post-processing: Filtering and filling: filtering or sieving and filling, packaging of formulation into drums/IBCs. PROC9
ES1-W6: Waste Collection: transfer of process wastes to storage containers. PROC8b
ES1-W7: Maintenance: Manufacturing equipment maintenance. PROC8b
ES1-W8: Use in batch processes. PROC4

Risk management measures:

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training [PPE16].

2.2 Control of environmental exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 100%

Operational conditions:

Frequency and duration of use: Release: continuous
Emission days: 225 days/year

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Contributing scenario:

ES1-E1: Formulation: Powder Coatings. ERC2, ERC6a, CEPE3
ES1-E2: Formulation: Can & Coil Coatings. ERC2, ERC6a, CEPE3
ES1-E3: Formulation: Marine & Protective Coatings. ERC2, ERC6a, CEPE3
ES1-E4: Formulation: Photocure. ERC2, ERC6a, CEPE3

Risk management measures:

Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
A leak prevention plan is needed to prevent low level continual releases.
Prevent leaks and the soil/water pollution caused by leaks.
Land spreading of sludge is prohibited - sludge from wastewater treatment is incinerated.

3. EXPOSURE ESTIMATION

Worker exposure:

The worker exposure estimates for the activities associated with this use of BADGE have been assessed using ECETOC TRA v2.
DNELs and PNECs are mentioned in point 8 of SDS. For more information not mentioned in Exposure scenario or Safety Data Sheet please ask for Chemical safety report.

Environmental exposure:

Used EUSES model.

4. GUIDANCE OF COMPLIANCE CHECK WITH REQUIREMENTS OF EXPOSURE SCENARIO

Combination of Risk management measures and Operational conditions stated in that exposure scenario guarantees Risk characterization Ratio (RCR) value < 1.
Downstream users could asses their own measures using model ECETOC TRA v2 or EUSES. They could calculate RCR as DEL/DNEL or PEC/PNEC (DNELs , PNECs in SDS).

1.TITLE OF THE EXPOSURE SCENARIO: ES2: Professional: Formulation /Blending / Reaction

Sector of use:	SU10, SU19
Product category:	PC19, PC32
Process category:	PROC3, PROC5, PROC8a, PROC8b, PROC9
Article category:	Not applicable.
Environmental relase category:	ERC2, ERC6a Specific environmental release category EFCC 8
Processes, task, activities covered:	Covers the formulation and blending in an professional setting including transfers of preparation from/to large vessels, use in closed processes, blending and mixing, laboratory use, reaction of monomers to polymers, post-processing, waste collecting, and maintenance.

2. OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

2.1. Control of worker exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 100%

Operational conditions:

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Contributing scenario:

ES2-W1: (Un)loading; fill drum contents into mixing vessel. PROC8a
ES2-W2: Formulation; mixing in closed system. PROC8a
ES2-W3: Formulation; mixing in open system. PROC8a
ES2-W4: Post-processing: packaging of formulation. PROC3
ES2-W5: Maintenance: cleaning of formulation equipment. PROC8b
ES2-W6: Formulation: Use in closed batch processes. PROC3
ES2-W7: Formulation: Mixing in closed batch process. PROC5

Risk management measures:

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training [PPE16].

2.2 Control of environmental exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 100%

Operational conditions:

Frequency and duration of use: Release: continuous
Emission days: 365 days/year

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Contributing scenario:

ES2-E1: Professional Formulation: Civil Engineering Applications. ERC2, ERC6a, EFCC 8

Risk management measures:

Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
A leak prevention plan is needed to prevent low level continual releases.
Prevent leaks and the soil/water pollution caused by leaks.

Prevent discharge of undissolved substance to waste water or recover from wastewater.
Land spreading of sludge is prohibited - sludge from wastewater treatment is incinerated

3. EXPOSURE ESTIMATION

Worker exposure:

The worker exposure estimates for the activities associated with this use of BADGE have been assessed using ECETOC TRA v2.
DNELs and PNECs are mentioned in point 8 of SDS. For more information not mentioned in Exposure scenario or Safety Data Sheet please ask for Chemical safety report.

Environmental exposure:

Used EUSES model.

4. GUIDANCE OF COMPLIANCE CHECK WITH REQUIREMENTS OF EXPOSURE SCENARIO

Combination of Risk management measures and Operational conditions stated in that exposure scenario guarantees Risk characterization Ratio (RCR) value < 1.
Downstream users could asses their own measures using model ECETOC TRA v2 or EUSES. They could calculate RCR as DEL/DNEL or PEC/PNEC (DNELs , PNECs in SDS).

1.TITLE OF THE EXPOSURE SCENARIO: ES3: Industrial: Coating Application

Sector of use:	SU3, SU10, SU17, SU19
Product category:	PC9, PC32
Process category:	PROC1, PROC2, PROC3, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10,PROC13
Article category:	Not applicable.
Environmental relase category:	ERC4a-air, ERC5, ERC8c Specific environmental release category CEPE18 (modified), EMPAC1 (modified), ACEA1 (modified)
Processes, task, activities covered:	Covers the end use of the product in industrial settings, including storage, preprocessing of the material, loading of equipment, on-line application, equipment cleaning, waste collection, laboratory activities, and spraying, roller/brush application, and infusion of product.

2. OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

2.1. Control of worker exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 40%

Operational conditions:

Frequency and duration of use: Covers daily exposures over 4 hour, unless noted otherwise.

Contributing scenario:

ES3-W1: Storage: Product delivery/storage -bulk product; delivery - outdoor. PROC8b
ES3-W2: Storage: Product delivery/storage -packaged product delivery – outdoor. PROC3
ES3-W4: Storage: Product delivery/storage -product storage - outdoor. PROC3
ES3-W8: Pre-processing: Preparation of material for application - batch, outdoor. PROC5
ES3-W13: Pre-processing: Loading of application equipment - batch, outdoor (liquid products). PROC8a
ES3-W18: Maintenance: Equipment cleaning - open in situ and offline – outdoor. PROC3

Risk management measures:

Ensure operation is undertaken outdoors [E69]. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training [PPE16].

Contributing scenario:

ES3-W3: Storage: Product delivery/storage -product storage - indoor. PROC3
ES3-W5: Pre-processing: Preparation of material for application – fully enclosed. PROC1
ES3-W6: Pre-processing: Preparation of material for application - continuous, closed. PROC2
ES3-W7: Pre-processing: Preparation of material for application - batch, indoor. PROC5
ES3-W9: Pre-processing: Preparation of material for application - transfer of material from one container to another. PROC8b
ES3-W10: Pre-processing: Loading of application equipment - fully enclosed. PROC1
ES3-W11: Pre-processing: Loading of application equipment - continuous, closed. PROC2
ES3-W12: Pre-processing: Loading of application equipment - batch, indoor (liquid products). PROC8b
ES3-W14: Pre-processing: Loading of application equipment - transfer of material from one container to another. PROC8b
ES3-W15: Processing: On-line application by dipping and/or pouring. PROC13
ES3-W16: Processing: Film formation –airdrying. PROC2
ES3-W17: Maintenance: Equipment cleaning -open in situ and offline – indoor. PROC3
ES3-W19: Waste Collection and storage: Transfer of process wastes to storage containers: off-line in workplace. PROC8a
ES3-W20: Quality Control: Quality control -laboratory use. PROC5
ES3-W21: Waste Collection and Storage: Storage of waste prior to removal for off-site management. PROC3
ES3-W24: Processing: Infusion. PROC3
ES3-W25: Calendaring Operations. PROC6
ES3-W26: Filling Operations. PROC9

Risk management measures:

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training [PPE16].

Contributing scenario:

ES3-W22: Processing: Spraying. PROC7

Risk management measures:

Minimise exposure by enclosing the operation or equipment and provide extract ventilation at openings [E60]. Wear chemically resistant gloves (tested to EN374) in combination with general training [PPE16]. Wear a half-face respirator conforming to EN140 with Type A filter or better.

Contributing scenario:

ES3-W23: Processing: Roller application or brushing. PROC10

Risk management measures:

Provide Extract Ventilation to Points where emissions can occur [E54]. Wear chemically resistant gloves (tested to EN374) in combination with 'basic'employee training [PPE16].

2.2 Control of environmental exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 40%

Operational conditions:

Frequency and duration of use: Release: continuous
Emission days: ES3-E1, ES3-E2: 220 days/year
ES3-E3: 365 days/year

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Contributing scenario:

ES3-E1: Industrial Use: Powder Coatings. ERC4, ERC5, ERC8c, CEPE 18 Modified
ES3-E2: Industrial Use: Can & Coil Coatings. ERC4, ERC5, ERC8c, EMPAC 1 Modified
ES3-E3: Industrial Use: Automotive. ERC4, ERC5, ERC8c, ACEA 1 Modified

Risk management measures:

Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
A leak prevention plan is needed to prevent low level continual releases.
Prevent leaks and the soil/water pollution caused by leaks.
Use bunds or dikes around storage facilities to prevent soil and water pollution in the event of a spill.
Prevent discharge of undissolved substance to waste water or recover from wastewater.
Land spreading of sludge is prohibited - sludge from wastewater treatment is incinerated.

3. EXPOSURE ESTIMATION

Worker exposure:

The worker exposure estimates for the activities associated with this use of BADGE have been assessed using ECETOC TRA v2.
DNELs and PNECs are mentioned in point 8 of SDS. For more information not mentioned in Exposure scenario or Safety Data Sheet please ask for Chemical safety report.

Environmental exposure:

Used EUSES model.

4. GUIDANCE OF COMPLIANCE CHECK WITH REQUIREMENTS OF EXPOSURE SCENARIO

Combination of Risk management measures and Operational conditions stated in that exposure scenario guarantees Risk characterization Ratio (RCR) value < 1.

Downstream users could asses their own measures using model ECETOC TRA v2 or EUSES. They could calculate RCR as DEL/DNEL or PEC/PNEC (DNELs , PNECs in SDS).

1.TITLE OF THE EXPOSURE SCENARIO: ES4: Professional: Coating Application

Sector of use:	SU17, SU19
Product category:	PC9
Process category:	PROC2, PROC3, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC19, PROC24
Article category:	Not applicable.
Environmental relase category:	ERC5, ERC6a, ERC8c Specific environmental release category: CEPE14, CEPE12
Processes, task, activities covered:	Covers the end use of the product in professional settings, including storage, pre-processing of the material, loading of equipment, on-line application, equipment cleaning, waste collection, laboratory activities, and spraying, roller/brush application, and infusion of product.

2. OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

2.1. Control of worker exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 40%

Operational conditions:

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Contributing scenario:

ES4-W1: Storage: Product delivery/storage - bulk product delivery - outdoor. PROC8a
ES4-W2: Storage: Product delivery/storage - packaged product delivery/storage - outdoor. PROC3
ES4-W6: Pre-Processing: Preparation of material for application - batch, outdoor. PROC5
ES4-W8: Pre-Processing: Preparation of material for application - transfer of material from one container to another - outdoor. PROC8a
ES4-W11: Pre-Processing: Loading of application equipment - batch, outdoor. PROC5
ES4-W13: Pre-Processing: Loading of application equipment - transfer of material from one container to another - outdoor. PROC8a
ES4-W21: Post-processing: Film formation - airdrying - outdoor. PROC2
ES4-W24: Maintenance: Equipment cleaning - open in situ or offline - outdoor. PROC5
ES4-W29: Maintenance: Manual removal of coatings - sanding, scraping, etc., outdoor. PROC24
ES4-W31: Maintenance: Hot work on coated surfaces: welding, cutting, burning, drilling – outdoor. PROC24

Risk management measures:

Ensure operation is undertaken outdoors [E69]. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training [PPE16].

Contributing scenario:

ES4-W3: Storage: Product delivery/storage - product storage - indoor. PROC3
ES4-W4: Pre-Processing: Preparation of material for application - closed, continuous. PROC2
ES4-W5: Pre-Processing: Preparation of material for application - batch, indoor. PROC5
ES4-W7: Pre-Processing: Preparation of material for application - transfer of material from one container to another - indoor. PROC8a
ES4-W9: Pre-Processing: Loading of application equipment - closed, continuous. PROC2
ES4-W10: Pre-Processing: Loading of application equipment - batch, indoor. PROC5
ES4-W12: Pre-Processing: Loading of application equipment - transfer of material from one container to another - indoor. PROC8a
ES4-W17: Processing: Manual brush, roller, spreader application of coatings - indoor. PROC10
ES4-W18: Processing: On-line roller, spreader, flow application of printing inks - indoor. PROC10
ES4-W20 Post-processing: Film formation - airdrying - indoor. PROC2
ES4-W22: Processing: Film formation - force drying (>50°C), stoving (>100°C), UV/EB curing. PROC2
ES4-W23 Maintenance: Equipment cleaning - open in situ or offline - indoor. PROC5
ES4-W25: Waste Collection and Storage: Transfer of process wastes to storage containers: off-line in workplace. PROC8b
ES4-W26: Quality Control: Quality control - laboratory use. PROC5

ES4-W27: Waste Collection and Storage: Storage of waste prior to removal for off-site management. PROC3
ES4-W28: Maintenance: Manual removal of coatings - sanding, scraping, etc., indoor. PROC24
ES4-W30: Maintenance: Hot work on coated surfaces: welding, cutting, burning, drilling – indoor. PROC24
ES4-W32: Processing: Treatment of articles by dipping and pouring. PROC13
ES4-W33: Processing: Hand-mixing with intimate contact and only PPE available. PROC19

Risk management measures:

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training [PPE16].

Contributing scenario:

ES4-W14: Processing: Manual spray application of coatings - outdoor. PROC11
ES4-W16: Processing: Manual brush, roller, spreader application of coatings - outdoor. PROC10

Risk management measures:

Ensure operation is undertaken outdoors [E69]. Wear a full face respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with general training [PPE16].

Contributing scenario:

ES4-W15: Processing: Manual spray application of coatings - indoor. PROC7
ES4-W19: Processing: Application of coatings from aerosol dispensers. PROC11

Risk management measures:

Provide Extract Ventilation to Points where emissions can occur (E54). Wear a full-face respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with general training.[PPE16].

2.2 Control of environmental exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 40%

Operational conditions:

Frequency and duration of use: Release: continuous
Emission days: 365 days/year

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Contributing scenario:

ES4-E1: Professional Coatings: Marine & Protective Coatings. ERC5, ERC6a, ERC8c, CEPE14
ES4-E2: Professional Coatings: Photocure. ERC5, ERC6a, ERC8c, CEPE12

Risk management measures:

Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
A leak prevention plan is needed to prevent low level continual releases.
Prevent leaks and the soil/water pollution caused by leaks.
Use bunds or dikes around storage facilities to prevent soil and water pollution in the event of a spill.
Prevent discharge of undissolved substance to waste water or recover from wastewater.
Land spreading of sludge is prohibited - sludge from wastewater treatment is incinerated.

3. EXPOSURE ESTIMATION

Worker exposure:

The worker exposure estimates for the activities associated with this use of BADGE have been assessed using ECETOC TRA v2.
DNELs and PNECs are mentioned in point 8 of SDS. For more information not mentioned in Exposure scenario or Safety Data Sheet please ask for Chemical safety report.

Environmental exposure:

Used EUSES model.

4. GUIDANCE OF COMPLIANCE CHECK WITH REQUIREMENTS OF EXPOSURE SCENARIO

Combination of Risk management measures and Operational conditions stated in that exposure scenario guarantees Risk characterization Ratio (RCR) value < 1.
Downstream users could asses their own measures using model ECETOC TRA v2 or EUSES. They could calculate RCR as DEL/DNEL or PEC/PNEC (DNELs , PNECs in SDS).

1.TITLE OF THE EXPOSURE SCENARIO: ES5: Industrial - Tooling and Casting

Sector of use:	SU12, SU16, SU17
Product category:	PC19, PC32
Process category:	PROC2, PROC3, PROC5, PROC6, PROC7, PROC8a, PROC9, PROC10, PROC13, PROC14, PROC24
Article category:	Not applicable.
Environmental relase category:	ERC5, ERC6a Specific environmental release category: ESVOC43
Processes, task, activities covered:	Covers the end use in industrial applications including synthesis, formulation, spraying applications, roller/brush application, dipping and pouring of articles, and other processing.

2. OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

2.1. Control of worker exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 30%

Operational conditions:

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Contributing scenario:

ES5-W1: Synthesis (Production of Preparation or Articles). PROC14
ES5-W2: Process (High [Mechanical] Energy Workup of Bound Substances]. PROC24a
ES5-W3: Formulation (Used in Closed Batch Process -Synthesis or Form.). PROC3
ES5-W4: Formulation (Mixing and Blending in Batch Process). PROC5
ES5-W5: Formulation (Transfer of Substances or Preparations at Non Dedicated Facilities)..PROC8a
ES5-W6: Formulation (Transfer of Substances or Preparations into Small Containers). PROC9
ES5-W8: Process (Treatment of Articles by Dipping and Pouring). PROC13
ES5-W9: Process (Production of Preparations or Articles). PROC14
ES5-W10: Process (High [Mechanical] Energy Work-up of Bound Substances]. PROC24a
ES5-W11: Use in closed, continuous process with occasional controlled exposure. PROC2
ES5-W12: Calendering operations. PROC6

Risk management measures:

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training [PPE16].

Contributing scenario:

ES5-W7: Processing (Manual brush & roller - indoor) - Line 90. PROC10

Risk management measures:

Provide Extract Ventilation to Points where emissions can occur [E54]. Wear chemically resistant gloves (tested to EN374) in combination with 'basic'employee training [PPE16].

Contributing scenario:

ES5-W13: Industrial Spraying. PROC7

Risk management measures:

Provide Extract Ventilation to Points where emissions can occur (E54). Wear a half-face respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with general training.[PPE16].

2.2 Control of environmental exposure

Product characteristics:

Physical form of product: liquid, low volatility

Concentration of substance in product: up to 30%

Operational conditions:

Frequency and duration of use: Release: continuous
Emission days: 300 days/year

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Contributing scenario:

ES5-E1: Industrial Castings: Composites. ERC5, ERC6a, ESVOC43
ES5-E2: Industrial Castings: Electrical Castings. ERC5, ERC6a, ESVOC43

Risk management measures:

Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
A leak prevention plan is needed to prevent low level continual releases.
Prevent leaks and the soil/water pollution caused by leaks.
Use bunds or dikes around storage facilities to prevent soil and water pollution in the event of a spill.
Prevent discharge of undissolved substance to waste water or recover from wastewater.
Land spreading of sludge is prohibited - sludge from wastewater treatment is incinerated.

3. EXPOSURE ESTIMATION

Worker exposure:

The worker exposure estimates for the activities associated with this use of BADGE have been assessed using ECETOC TRA v2.
DNELs and PNECs are mentioned in point 8 of SDS. For more information not mentioned in Exposure scenario or Safety Data Sheet please ask for Chemical safety report.

Environmental exposure:

Used EUSES model.

4. GUIDANCE OF COMPLIANCE CHECK WITH REQUIREMENTS OF EXPOSURE SCENARIO

Combination of Risk management measures and Operational conditions stated in that exposure scenario guarantees Risk characterization Ratio (RCR) value < 1.
Downstream users could asses their own measures using model ECETOC TRA v2 or EUSES. They could calculate RCR as DEL/DNEL or PEC/PNEC (DNELs , PNECs in SDS).

1.TITLE OF THE EXPOSURE SCENARIO: ES6: Professional: Tooling and Casting

Sector of use:	SU12, SU16
Product category:	PC1,PC9, PC32, PC33
Process category:	PROC5, PROC6, PROC10, PROC11, PROC13, PROC14, PROC19, PROC24
Article category:	Not applicable.
Environmental relase category:	ERC5, ERC6a, ERC8c, ERC8f Specific environmental release category: ESVOC43
Processes, task, activities covered:	Covers the end use in professional user applications including synthesis, formulation, spraying applications, roller/brush application, dipping and pouring of articles, and other processing.

2. OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

2.1. Control of worker exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 30%

Operational conditions:

Frequency and duration of use: Covers daily exposures up to 8 hours (unless stated differently).

Contributing scenario:

ES6-W1: Processing (Manual brush & roller - indoor). PROC10

Risk management measures:

Provide Extract Ventilation to Points where emissions can occur [E54]. Wear chemically resistant gloves (tested to EN374) in combination with 'basic'employee training [PPE16].

Contributing scenario:

ES6-W2: Process (Spraying Outside Industrial Settings &/or Applications). PROC11

Risk management measures:

Provide Extract Ventilation to Points where emissions can occur (E54). Wear a half-face respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with general training.[PPE16].

Contributing scenario:

ES6-W3: Processing (Treatment of Articles -Dipping & Pouring). PROC13
ES6-W4: Synthesis (Production of Preparation or Articles). PROC14
ES6-W6: Process (High [Mechanical] Energy Workup of Bound Substances]. PROC24a
ES6-W7: Mixing or blending in batch processes (multistage and/or significant contact). PROC5
ES6-W8: Calendering operations. PROC6

Risk management measures:

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training [PPE16].

Contributing scenario:

ES6-W5: Processing (Handmixing with intimate contact - only PPE available) - Line 94. PROC19

Risk management measures:

Wear a half-face respirator conforming to EN140 with Type A filter or better. Wear chemically resistant gloves (tested to EN374) in combination with general training [PPE16].

2.2 Control of environmental exposure

Product characteristics:

Physical form of product: liquid, low volatility

Concentration of substance in product: up to 30%

Operational conditions:

Frequency and duration of use: Release: continuous
Emission days: 300 days/year

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Contributing scenario:

ES6-E1: Professional Castings: Electrical Laminates. ERC5, ERC6a, ERC8c, ERC8f, ESVOC43

Risk management measures:

Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
A leak prevention plan is needed to prevent low level continual releases.
Prevent leaks and the soil/water pollution caused by leaks.
Use bunds or dikes around storage facilities to prevent soil and water pollution in the event of a spill.
Prevent discharge of undissolved substance to waste water or recover from wastewater.
Land spreading of sludge is prohibited - sludge from wastewater treatment is incinerated.

3. EXPOSURE ESTIMATION

Worker exposure:

The worker exposure estimates for the activities associated with this use of BADGE have been assessed using ECETOC TRA v2.
DNELs and PNECs are mentioned in point 8 of SDS. For more information not mentioned in Exposure scenario or Safety Data Sheet please ask for Chemical safety report.

Environmental exposure:

Used EUSES model.

4. GUIDANCE OF COMPLIANCE CHECK WITH REQUIREMENTS OF EXPOSURE SCENARIO

Combination of Risk management measures and Operational conditions stated in that exposure scenario guarantees Risk characterization Ratio (RCR) value < 1.
Downstream users could asses their own measures using model ECETOC TRA v2 or EUSES. They could calculate RCR as DEL/DNEL or PEC/PNEC (DNELs , PNECs in SDS).

1.TITLE OF THE EXPOSURE SCENARIO: ES7: Consumer Use: Exposure from Use of Two-Component Epoxy Paints and Adhesives

Sector of use:	Not applicable.
Product category:	PC1 (adhesives), PC9a (paints)
Process category:	Not applicable.
Article category:	Not applicable.
Environmental relase category:	ERC8c, ERC8f Specific environmental release category: FEICA11
Processes, task, activities covered:	Two-component epoxy paint applied with a brush/roller to a surface such as a garage floor, Do-It-Yourself epoxy adhesives.

2. OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

2.1. Control of worker exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 35% (paints)
up to 45% (adhesives)

Operational conditions:

Frequency and duration of use: Covers daily exposures up to 8 hour, unless otherwise noted.
Other Operational Conditions: Covers use in a one car garage (34 m3) under typical ventilation(paints)
Covers exposure up to (hours/event): 10 min (adhesives)

Contributing scenario:

CONTROLLING CONSUMER EXPOSURE

Risk management measures:

Not applicable.

2.2 Control of environmental exposure

Product characteristics:

Physical form of product: liquid, low volatility
Concentration of substance in product: up to 35% (paints)
up to 45% (adhesives)

Operational conditions:

Frequency and duration of use: Release: continuous
Emission days: 365 days/year

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Contributing scenario:

ES7-E1: DIY Adhesives & Paints. ERC8c, ERC8f, FEICA 11

Risk management measures:

Do not pour down the drain.
Dispose of waste cans and containers according to local regulations.
Prevent exposure of soil using protective covers.

3. EXPOSURE ESTIMATION

Worker exposure:
The consumer exposure estimates for the activities associated with this use of BADGE have been assessed using ConsExpo 4.1tool RIVM (2010)
DNELs and PNECs are mentioned in point 8 of SDS. For more information not mentioned in ES or SDS please ask for Chemical safety report.

Environmental exposure:
Used EUSES model.

4. GUIDANCE OF COMPLIANCE CHECK WITH REQUIREMENTS OF EXPOSURE SCENARIO

Combination of Risk management measures and Operational conditions stated in that exposure scenario guarantees Risk characterization Ratio (RCR) value < 1.

List of Abbreviations:

SU3 Industrial uses
SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
SU10 Formulation
SU12 Manufacture of plastics products, including compounding and conversion
SU16 Manufacture of computer, electronic and optical products, electrical equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU19 Building and construction work
PC1 Adhesives, sealants
PC9a Coatings and paints, thinners, paint removers
PC19 Intermediate
PC32 Polymer preparations and compounds
PC33 Semiconductors
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
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
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC6 Calendering operations
PROC7 Industrial spraying
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at dedicated facili-ties
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC11 Non industrial spraying
PROC13 Treatment of articles by dipping and pouring
PROC14 Production of preparations* or articles by tabletting, compression, extrusion, pelletisation
PROC19 Hand-mixing with intimate contact and only PPE available.
PROC24 High (mechanical) energy work-up of substances bound in materials and/or articles.
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5 Use at industrial site leading to inclusion into/onto article
ERC6a Use of intermediate
ERC8c Widespread use leading to inclusion into/onto article (indoor)
ERC8f Widespread use leading to inclusion into/onto article (outdoor)
- other descriptors can be found at:
http://echa.europa.eu/documents/10162/13632/information_requirements_r12_en.pdf
DNEL Derived no-effect level

PNEC Predicted no-effect concentration
RCR Risk characterisation ratio