

This safety data sheet was created pursuant to the requirements of:
Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008
This SDS is for generic information purposes and does not reflect required country specific
information for OEL

Polytec EP 601 Part A
Supercedes Date: 11-Dec-2023
Revision date 06-Feb-2024
Revision Number 3

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

1.1. Product identifier

Product Name Polytec EP 601 Part A

Other means of identification

Pure substance/mixture Mixture

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

Recommended use Resin

Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Company Name

Polytec PT GmbH Ettlinger Strasse 30 76307 Karlsbad Germany

Tel: +49 7202 706-3500

E-mail address SDS.box-EU@bostik.com

1.4. Emergency telephone number

Emergency Telephone 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation	Category 2 - (H315)
Serious eye damage/eye irritation	Category 2 - (H319)
Skin sensitisation	Category 1 - (H317)
Chronic aquatic toxicity	Category 2 - (H411)

2.2. Label elements

Contains bis-[4-(2,3-epoxipropoxi)phenyl]propane; Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropane and phenol

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Signal word Warning

Hazard statements

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

Precautionary Statements - EU (§28, 1272/2008)

P261 - Avoid breathing dust/fume/gas/mist/vapours/spray

P264 - Wash face, hands and any exposed skin thoroughly after handling

P273 - Avoid release to the environment

P280 - Wear protective gloves and eye/face protection

P337 + P313 - If eye irritation persists: Get medical advice/attention

P391 - Collect spillage

Additional information

This product is part of a kit. Please also refer to the SDS for the other component(s) of the kit.

2.3. Other hazards

No information available.

PBT & vPvB

This mixture contains no substance considered to be persistent, bioaccumulating or toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

This product does not contain any known or suspected endocrine disruptors. **Endocrine Disruptor Information**

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical name	EC No (EU Index No).	CAS No	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-ter m)	REACH registration number
bis-[4-(2,3-epoxipropoxi) phenyl]propane 40 - <80 %	216-823-5 (603-073-00- 2)	1675-54-3	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Skin Sens. 1 (H317) Aquatic Chronic 2 (H411) (EUH205)	Eye Irrit. 2 :: C>=5% Skin Irrit. 2 :: C>=5%	1	-	01-2119456619- 26-xxxx
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxypropa	500-006-8	9003-36-5	Eye Irrit. 2 (H319) Skin Irrit. 2 (H315) Skin Sens. 1 (H317) Aquatic Chronic 2	-	1	-	01-2119454392- 40-XXXX

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ne and phenol		(H411)		
40 - <80 %				

Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate

If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

Chemical name	EC No (EU Index No)	CAS No.	Oral LD50 mg/kg	Dermal LD50 mg/kg		Inhalation LC50 - 4 hour - vapour - mg/L	
bis-[4-(2,3-epoxipropoxi)phenyl]propane	216-823-5 (603-073-00-2)	1675-54-3	-	-	-	-	-
Formaldehyde, oligomeric reaction products with 1-chloro-2,3-epoxyprop ane and phenol	500-006-8	9003-36-5	-	-	-	-	-

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and

persists.

Skin contact May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see

a doctor. Wash off immediately with soap and plenty of water for at least 15 minutes.

Ingestion Rinse mouth. Never give anything by mouth to an unconscious person. Do NOT induce

vomiting. Call a doctor.

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section

8).

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

Symptoms Itching. Rashes. Hives. May cause redness and tearing of the eyes. Burning sensation.

Effects of Exposure No information available.

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

Note to doctorsMay cause sensitisation in susceptible persons. Treat symptomatically.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the

surrounding environment.

Unsuitable extinguishing media No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the

Product is or contains a sensitiser. May cause sensitisation by skin contact.

chemical

Carbon oxides. Hydrogen chloride. Hazardous combustion products

5.3. Advice for firefighters

precautions for fire-fighters

Special protective equipment and Firefighters should wear self-contained breathing apparatus and full firefighting turnout

gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal

protective equipment as required. Evacuate personnel to safe areas. Keep people away

from and upwind of spill/leak.

Other information Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so.

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact Advice on safe handling

with skin, eyes or clothing. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse. This product is part of a kit.

Please also refer to the SDS for the other component(s) of the kit.

Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this General hygiene considerations

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product. Avoid contact with skin, eyes or clothing.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Recommended storage

temperature

Keep at temperatures between 5 and 35 °C.

7.3. Specific end use(s)

Specific use(s)

Resin.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

Other information Observe technical data sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational

exposure limits established by the region specific regulatory bodies

Only European Community Occupational Exposure Limits will be shown in this document. Please refer to regional SDS for further information.

Derived No Effect Level (DNEL) No information available

Derived No Effect Level (DN	Perived No Effect Level (DNEL)				
bis-[4-(2,3-epoxipropoxi)phe	enyl]propane (1675-54-3)				
Type	Exposure route	Derived No Effect Level (DNEL)	Safety factor		
worker Long term Systemic health effects	Inhalation	12.25 mg/m ³			
worker Short term Systemic health effects	Inhalation	12.25 mg/m³			
worker Long term Systemic health effects	Dermal	8.33 mg/kg bw/d			
worker Short term Systemic health effects	Dermal	8.33 mg/kg bw/d			

Derived No Effect Level (DN	Derived No Effect Level (DNEL)					
bis-[4-(2,3-epoxipropoxi)phe	enyl]propane (1675-54-3)					
Туре	Exposure route	Derived No Effect Level (DNEL)	Safety factor			
Consumer Long term Systemic health effects	Dermal	3.571 mg/kg bw/d				
Consumer Short term Systemic health effects	Dermal	3.571 mg/kg bw/d				
Consumer Long term	Oral	0.75 mg/kg bw/d				

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Systemic health effects			
Consumer	Dermal	0.75 mg/kg bw/d	
Short term			
Systemic health effects			

Predicted No Effect Concentration No information available. **(PNEC)**

Predicted No Effect Concentration (PNEC)	
bis-[4-(2,3-epoxipropoxi)phenyl]propane (16	75-54-3)
Environmental compartment	Predicted No Effect Concentration (PNEC)
Freshwater	0.006 mg/l
Marine water	0.001 mg/l
Sewage treatment plant	10 mg/l
Freshwater sediment	0.996 mg/kg dry weight
Marine sediment	0.1 mg/kg dry weight
Soil	0.196 mg/kg dry weight

8.2. Exposure controls

Engineering controls Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Hand protection Recommended Use:. Nitrile rubber. Butyl rubber. Glove thickness > 0.7mm. The

breakthrough time for the mentioned glove material is in general greater than 480 min. Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. The breakthrough time of the gloves depends on the material and the thickness as well as the temperature. Gloves should be replaced regularly and if there is any sign of damage to the glove material. Unsuitable gloves materials:. Disposable gloves. Leather. Gloves must

conform to standard EN 374

Skin and body protection Wear suitable protective clothing.

Respiratory protection During spraying wear suitable respiratory equipment. In case of inadequate ventilation

wear respiratory protection.

Recommended filter type: Wear a respirator conforming to EN 140 with Type A/P2 filter or better. Organic gases

and vapours filter conforming to EN 14387.

Environmental exposure controls Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical stateLiquidAppearanceLiquidColourTransparentOdourCharacteristic.

<u>Property</u> <u>Values</u> <u>Remarks • Method</u>

Melting point / freezing pointNo data availableNone knownInitial boiling point and boiling= 201 °CNone known

range

Flammability No data available None known Flammability Limit in Air None known

Upper flammability or explosive No data available

limits

Lower flammability or explosive No data available

limits

Flash point = 214 °C Not determined Autoignition temperature 400 °C Not applicable

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Decomposition temperatureNone known

pH No data available Not applicable. Substance/mixture is

non-polar/aprotic.

pH (as aqueous solution) No data available None known No data available None known Kinematic viscosity Dynamic viscosity 8000 mPas @ 23 °C Water solubility Immiscible in water. None known No data available None known Solubility(ies) **Partition coefficient** No data available None known Vapour pressure No data available None known Relative density No data available None known

Bulk Density

No data available

Density

1.17 g/cm³

Relative vapour density No data available None known

Particle characteristics

Particle Size No information available Particle Size Distribution No information available

9.2. Other information

Solid content (%) No information available

VOC content No data available

9.2.1. Information with regards to physical hazard classes Not applicable

9.2.2. Other safety characteristics No information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical None.

impact

Sensitivity to static discharge None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

10.4. Conditions to avoid

Conditions to avoidNone known based on information supplied.

10.5. Incompatible materials

Incompatible materials Strong acids. Strong bases. Strong oxidising agents. Strong reducing agents.

10.6. Hazardous decomposition products

Hazardous decomposition

products

Carbon oxides.

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SECTION 11: Toxicological information

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

Information on likely routes of exposure

Product Information

Specific test data for the substance or mixture is not available. May cause irritation of Inhalation

respiratory tract.

Specific test data for the substance or mixture is not available. Causes serious eye Eye contact

irritation. (based on components). May cause redness, itching, and pain.

Skin contact May cause sensitisation by skin contact. Specific test data for the substance or mixture is

not available. Repeated or prolonged skin contact may cause allergic reactions with

susceptible persons. (based on components). Causes skin irritation.

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause

gastrointestinal irritation, nausea, vomiting and diarrhoea.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Itching. Rashes. Hives. Redness. May cause redness and tearing of the eyes.

Acute toxicity

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document

>5000 mg/kg ATEmix (oral) ATEmix (dermal) >5000 mg/kg >20000 ppm ATEmix (inhalation-gas) ATEmix (inhalation-dust/mist) >5 mg/l >20 mg/l ATEmix (inhalation-vapour)

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
bis-[4-(2,3-epoxipropoxi)phenyl	=11300 µL/kg (Rattus)	LD50 >2000 mg/Kg (Rattus)	-
]propane			
Formaldehyde, oligomeric	LD50 > 5 g/kg (Rattus) (OECD	LD50 > 2000 mg/kg	-
reaction products with	401)	(Rattus)(OECD 402)	
1-chloro-2,3-epoxypropane and			
phenol			

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Classification based on data available for ingredients. Causes skin irritation.

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes serious eye irritation.

May cause an allergic skin reaction. Respiratory or skin sensitisation

Germ cell mutagenicity Based on available data, the classification criteria are not met.

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Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicityBased on available data, the classification criteria are not met.

STOT - single exposureBased on available data, the classification criteria are not met.

STOT - repeated exposureBased on available data, the classification criteria are not met.

Aspiration hazard Based on available data, the classification criteria are not met.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Endocrine disrupting properties No information available.

11.2.2. Other information

Other adverse effects No information available.

Note: PC-ADH-8 Multi-component adhesives and sealants This product is part of a kit Please

also refer to the SDS for the other component(s) of the kit

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity Toxic to aquatic life with long lasting effects.

Chemical name	Algae/aquatic	Fish	Toxicity to	Crustacea	M-Factor	M-Factor
	plants		microorganisms			(long-term)
bis-[4-(2,3-epoxipropoxi	EC50 (72h) = 9.4	1.5 mg/l 96Hr	-	LD50 (48h) =2.7		
)phenyl]propane	mg/L	(Oncorhynchus		mg/L (Daphnia		
1675-54-3	(Scenedesmus	mykiss)		magna)		
	capricornutum)	(OECD 203)		(OECD 202)		
	EPA-660/3-75-0					
	09					

12.2. Persistence and degradability

Persistence and degradability No information available.

12.3. Bioaccumulative potential

Bioaccumulation

Component Information

Chemical name	Partition coefficient
bis-[4-(2,3-epoxipropoxi)phenyl]propane	3.78

12.4. Mobility in soil

Mobility in soil No information available.

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12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB above the

threshold of declaration.

Chemical name	PBT and vPvB assessment
bis-[4-(2,3-epoxipropoxi)phenyl]propane	The substance is not PBT / vPvB
Formaldehyde, oligomeric reaction products with	The substance is not PBT / vPvB
1-chloro-2,3-epoxypropane and phenol	

12.6. Endocrine disrupting properties

Endocrine disrupting properties No information available.

12.7. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused

products

Dispose of in accordance with local regulations. Dispose of waste in accordance with

environmental legislation.

Contaminated packaging Do not reuse empty containers.

according to EWC

Waste codes / waste designations 08 04 09* waste adhesives and sealants containing organic solvents or other dangerous

substances.

Other information Waste codes should be assigned by the user based on the application for which the

product was used.

SECTION 14: Transport information

Land transport (ADR/RID)

14.1 UN number or ID number UN3082

Environmentally hazardous substances, liquid, n.o.s. 14.2 UN proper shipping name

(bis-[4-(2,3-epoxipropoxi)phenyl]propane, Formaldehyde, oligomeric reaction products

with 1-chloro-2,3-epoxypropane and phenol)

14.3 Transport hazard class(es)

Labels 9

Ш 14.4 Packing group

UN3082, Environmentally hazardous substances, liquid, n.o.s. Description

(bis-[4-(2,3-epoxipropoxi)phenyl]propane, Formaldehyde, oligomeric reaction products

with 1-chloro-2,3-epoxypropane and phenol), 9, III, (-)

14.5 Environmental hazards Yes

14.6 Special precautions for user

Special Provisions 274, 335, 601, 375

Classification code M6 **Tunnel restriction code** (-) Limited quantity (LQ) 5 L **ADR Hazard Id (Kemmler** 90

Number)

<u>IMDG</u>

14.1 UN number or ID number UN3082

14.2 UN proper shipping name Environmentally hazardous substances, liquid, n.o.s.

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(bis-[4-(2,3-epoxipropoxi)phenyl]propane, Formaldehyde, oligomeric reaction products

with 1-chloro-2,3-epoxypropane and phenol)

14.3 Transport hazard class(es)914.4 Packing group

Description UN3082, Environmentally hazardous substances, liquid, n.o.s.

(bis-[4-(2,3-epoxipropoxi)phenyl]propane, Formaldehyde, oligomeric reaction products

with 1-chloro-2,3-epoxypropane and phenol), 9, III, Marine pollutant

14.5 Marine pollutant P

14.6 Special precautions for user

Special Provisions 274, 335, 969

Limited Quantity (LQ) 5 L EmS-No. F-A, S-F

14.7 Maritime transport in bulk according to IMO instruments

Transport in bulk according to Annex II of MARPOL and the IBC Code Not applicable

Air transport (ICAO-TI / IATA-DGR)

14.1 UN number or ID number UN3082

14.2 UN proper shipping name Environmentally hazardous substances, liquid, n.o.s.

(bis-[4-(2,3-epoxipropoxi)phenyl]propane, Formaldehyde, oligomeric reaction products

with 1-chloro-2,3-epoxypropane and phenol)

14.3 Transport hazard class(es) 9

14.4 Packing group

Description UN3082, Environmentally hazardous substances, liquid, n.o.s.

(bis-[4-(2,3-epoxipropoxi)phenyl]propane, Formaldehyde, oligomeric reaction products

with 1-chloro-2,3-epoxypropane and phenol), 9, III

14.5 Environmental hazards Yes

14.6 Special precautions for user

Special Provisions A97, A158, A197

Limited quantity (LQ) 30 kg G **ERG Code** 9L

Section 15: REGULATORY INFORMATION

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

European Union

Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACh) Regulation (EC 1907/2006)

SVHC: Substances of Very High Concern for Authorisation:

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

EU-REACH (1907/2006) - Annex XVII - Substances subject to Restriction

This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

Substance subject to authorisation per REACH Annex XIV

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV)

Dangerous substance category per Seveso Directive (2012/18/EU)

E2 - Hazardous to the Aquatic Environment in Category Chronic 2

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Ozone-depleting substances (ODS) regulation (EC) 1005/2009

Not applicable

Persistent Organic Pollutants

Not applicable

National regulations

France

Germany

Ordinance on Industrial Safety and Health - Germany - BetrSichV

No flammable liquids in accordance with BetrSichV

Water hazard class (WGK) obviously hazardous to water (WGK 2)

TRGS - 510 Storage Class Storage Class 10 : Combustible liquids

Netherlands

List of Carcinogenic, mutagenic and reproductive toxin substances in accordance with Inspectorate SZW (Netherlands)

Not Listed

Denmark

Registration number(s) (P-no.) No information available

Norway

Registration number(s) (PRN-no.) No information available

15.2. Chemical safety assessment

Chemical Safety Assessments have been carried out by the Reach registrants for substances registered at >10 tpa. Chemical Safety Assessment has been carried out for this mixture.

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3

EUH205 - Contains epoxy constituents. May produce an allergic reaction

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

SVHC: Substances of Very High Concern for Authorisation:

PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances

vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances STOT RE: Specific target organ toxicity - Repeated exposure

STOT SE: Specific target organ toxicity - Single exposure

EWC: European Waste Catalogue

LOW: List of Wastes (see http://ec.europa.eu/environment/waste/framework/list.htm)

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IATA: International Air Transport Association

ICAO: ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air

IMDG: International Maritime Dangerous Goods

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RID: Regulations concerning the International Carriage of Dangerous Goods by Rail

Legend SECTION 8: Exposure controls/personal protection

TWA TWA (time-weighted average) STEL STEL (Short Term Exposure Limit)

AGW Occupational exposure limit value BGW Biological limit value Ceiling Maximum limit value Sk* Skin designation

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - Vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS

European Food Safety Authority (EFSA)

European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)

European Chemicals Agency (ECHA) (ECHA_API)

EPA (Environmental Protection Agency)

Acute Exposure Guideline Level(s) (AEGL(s))

International Uniform Chemical Information Database (IUCLID)

National Institute of Technology and Evaluation (NITE)

NIOSH (National Institute for Occupational Safety and Health)

Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme

Organisation for Economic Co-operation and Development Screening Information Data Set

Prepared By Product Safety & Regulatory Affairs

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Training Advice No information available

Further information No information available

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

Regulation (EC) No. 1272/2008 and Regulation (EC) No. 1907/2006 as amended by Regulation (EU) No. 2020/878

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

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This safety data sheet was created pursuant to the requirements of:
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This SDS is for generic information purposes and does not reflect required country specific information for OEL

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

1.1. Product identifier

Product Name Polytec EP 601 Part B

Other means of identification

REACH Registration Number 01-2119557899-12-xxxx

Pure substance/mixture Substance

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

Recommended use Hardener

Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Company Name

Polytec PT GmbH Ettlinger Strasse 30 76307 Karlsbad Germany

Tel: +49 7202 706-3500

E-mail address SDS.box-EU@bostik.com

1.4. Emergency telephone number

Emergency Telephone 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation	Category 1 Sub-category C - (H314)
Serious eye damage/eye irritation	Category 1 - (H318)
Chronic aquatic toxicity	Category 3 - (H412)

2.2. Label elements

Contains Reaction products of di-, tri- and tetra-propoxylated propane-1,2-diol with ammonia

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Signal word Danger

Hazard statements

H314 - Causes severe skin burns and eye damage

H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements - EU (§28, 1272/2008)

P260 - Do not breathe dust/fume/gas/mist/vapours/spray

P280 - Wear protective gloves/protective clothing and eye/face protection

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower] P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor

Additional information

This product requires child resistant fastenings if supplied to the general public. This product requires tactile warnings if supplied to the general public. This product is part of a kit. Please also refer to the SDS for the other component(s) of the kit.

2.3. Other hazards

Harmful to aquatic life.

PBT & vPvB

The components in this formulation do not meet the criteria for classification as PBT or vPvB.

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	EC No (EU Index No).	CAS No	Classification according to	concentration limit	M-Factor	(long-ter	registration
			Regulation (EC) No. 1272/2008 [CLP]	(SCL)		m)	number
Reaction products of di-, tri- and tetra-propoxylated propane-1,2-diol with ammonia 80 - 100 %	(618-561-0)		Skin Corr. 1C (H314) Eye Dam. 1 (H318) Aquatic Chronic 3 (H412)	-	-	-	01-2119557899- 12-XXXX

Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate

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If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

Chemical name	EC No (EU	CAS No.	Oral LD50	Dermal LD50	Inhalation	Inhalation	Inhalation
	Index No)		mg/kg	mg/kg	LC50 - 4 hour	LC50 - 4 hour	LC50 - 4 hour
					- dust/mist -	- vapour -	- gas - ppm
					mg/L	mg/L	
Reaction products of	(618-561-0)		-	-	-	-	-
di-, tri- and							
tetra-propoxylated							
propane-1,2-diol with							
ammonia							

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Immediate medical attention is required. Show this safety data sheet to the doctor in

attendance.

Inhalation Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical

attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained

personnel should) give oxygen. Delayed pulmonary edema may occur.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if

present and easy to do. Continue rinsing. Get immediate medical attention.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated

clothes and shoes. Get immediate medical attention.

Ingestion Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious

person. Get immediate medical attention.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved, take precautions to

protect themselves and prevent spread of contamination. Avoid contact with skin, eyes

or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth

resuscitation. Wear personal protective clothing (see section 8).

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

Symptoms Burning sensation.

Effects of Exposure No information available.

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

Note to doctors Product is a corrosive material. Use of gastric lavage or emesis is contra-indicated.

Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood

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pressure may occur with moist rales, frothy sputum, and high pulse pressure.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the

surrounding environment.

Unsuitable extinguishing media No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the

chemical

The product causes burns of eyes, skin and mucous membranes. Thermal

decomposition can lead to release of irritating gases and vapours.

Hazardous combustion products Nitrogen oxides (NOx).

5.3. Advice for firefighters

precautions for fire-fighters

Special protective equipment and Firefighters should wear self-contained breathing apparatus and full firefighting turnout

gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate

ventilation. Use personal protective equipment as required. Evacuate personnel to safe

areas. Keep people away from and upwind of spill/leak.

Other information Refer to protective measures listed in Sections 7 and 8.

Use personal protection recommended in Section 8. For emergency responders

6.2. Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Should not be released into the

environment. Do not allow to enter into soil/subsoil. Prevent product from entering

drains.

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling This product is part of a kit. Please also refer to the SDS for the other component(s) of

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the kit. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash it before reuse.

General hygiene considerations

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from **Storage Conditions**

moisture. Store locked up. Keep out of the reach of children. Store away from other

materials.

Recommended storage

temperature

Keep at temperatures between 2 and 40 °C.

7.3. Specific end use(s)

Specific use(s) Hardener.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

Other information Observe technical data sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational

exposure limits established by the region specific regulatory bodies

Only European Community Occupational Exposure Limits will be shown in this document. Please refer to regional SDS for further information.

Derived No Effect Level (DNEL) No information available

Derived No Effect Level (DNEL)						
Reaction products of di-, tri- and t	etra-propoxylated propane-1	I,2-diol with ammonia (
)						
Туре	Exposure route		Safety factor			
		(DNEL)				
worker	Dermal	2.5 mg/kg bw/d				
worker	Inhalation	1.36 mg/kg bw/d				

Predicted No Effect Concentration No information available. (PNEC)

Predicted No Effect Concentration (PNEC)
Reaction products of di-, tri- and tetra-propoxylated propane-1,2-diol with ammonia (

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)	
Environmental compartment	Predicted No Effect Concentration (PNEC)
Freshwater	0.015 mg/l
Marine water	0.0142 mg/l
Freshwater sediment	0.132 mg/kg dry weight
Marine sediment	0.125 mg/kg dry weight
Sewage treatment plant	7.5 mg/l
Freshwater - intermittent	0.15 mg/kg dry weight
Soil	0.018 mg/kg dry weight

8.2. Exposure controls

Engineering controls Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Wear chemical splash goggles and

face shield when eye and face contact is possible due to splashing or spraying of

material.

Hand protection Recommended Use:. Nitrile rubber. Butyl rubber. Glove thickness > 0.7mm. The

breakthrough time for the mentioned glove material is in general greater than 240 min. Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. The breakthrough time of the gloves depends on the material and the thickness as well as the temperature. Unsuitable protective clothing. Leather. Disposable gloves. Gloves must conform to

standard EN 374

Skin and body protection Suitable protective clothing.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment. During spraying

wear suitable respiratory equipment.

Recommended filter type: Wear a respirator conforming to EN 140 with Type A/P2 filter or better. Organic gases

and vapours filter conforming to EN 14387.

Environmental exposure controls Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical stateLiquidAppearanceLiquidColourTransparentOdourAmmoniacal.

<u>Property</u> <u>Values</u> <u>Remarks • Method</u>

Melting point / freezing point No data available None known

Initial boiling point and boiling 232 °C No information available

range

Flammability No data available None known Flammability Limit in Air None known

Upper flammability or explosive No data available

limits

Lower flammability or explosive No data available

limits

Flash point 128 °C CC (closed cup) ISO 2719

Autoignition temperature 230 °C Not applicable

Decomposition temperature None known

pH No data available None known.
pH (as aqueous solution)

No data available None known.
solution (5 %)
Kinematic viscosity

5.46 mm²/s

@ 40°C

Dynamic viscosity10 mPa s @ 23 °C **Water solubility**10 mPa s 100 g/l @ 20 °C No information available

Solubility(ies)No data availableNone knownPartition coefficient1.34@ 25 °C

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None known

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Vapour pressure0.9 hPa@ 20 °CRelative densityNo data availableNone known

Bulk density

Density

No data available

0.95 g/cm³

Relative vapour density No data available Particle characteristics

Particle Size No information available Particle Size Distribution No information available

9.2. Other information

Solid content (%) No information available

VOC content No data available

9.2.1. Information with regards to physical hazard classes

Not applicable

9.2.2. Other safety characteristics

No information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical None.

impact

Sensitivity to static discharge None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

10.4. Conditions to avoid

Conditions to avoid Exposure to air or moisture over prolonged periods.

10.5. Incompatible materials

Incompatible materials Acids. Bases. Oxidising agent.

10.6. Hazardous decomposition products

Hazardous decomposition Ammonia. Carbon monoxide. Carbon dioxide (CO2). Aldehydes. Ketones and their

products derivatives. Nitrogen oxides (NOx).

SECTION 11: Toxicological information

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

Information on likely routes of exposure

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Product Information

Inhalation Specific test data for the substance or mixture is not available. Corrosive by inhalation.

(based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic

edema of the lungs. Pulmonary edema can be fatal.

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye

damage. (based on components). Corrosive to the eyes and may cause severe damage

including blindness. May cause irreversible damage to eyes.

Skin contact Prolonged skin contact causes burns. Symptoms may be delayed. Specific test data for

the substance or mixture is not available. May cause irritation.

Ingestion Specific test data for the substance or mixture is not available. Causes burns. (based on

components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Redness. Burning. May cause blindness. Coughing and/ or wheezing.

Acute toxicity

Numerical measures of toxicity

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Reaction products of di-, tri-	LD50: 2885 mg/kg (Rattus)	LD50: 2980 mg/kg	-
and tetra-propoxylated	OECD 401	(Oryctolagus cuniculus)	
propane-1,2-diol with ammonia		OECD 402	

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Causes severe skin burns and eye damage.

Reaction products of di-, tri- and tetra-propoxylated propane-1,2-diol with ammonia (
Method	Species	Exposure route	Effective dose	Exposure time	Results		
OECD Test No. 404:	Rabbit			1-4 hours	Corrosive		
Acute Dermal							
Irritation/Corrosion							

Serious eye damage/eye irritation Causes serious eye damage. Causes burns. Classification based on data available for ingredients.

Reaction products of di-, tri- and tetra-propoxylated propane-1,2-diol with ammonia (--

method Species Exposure route Enective dose Exposure time incesuits	Method	Species	Exposure route	Effective dose	Exposure time	Results
---	--------	---------	----------------	----------------	---------------	---------

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OECD Test No. 405:	Rabbit		Corrosive - causes
Acute Eye			irreversible eye
Irritation/Corrosion			damage

Respiratory or skin sensitisation Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Component Information

Reaction products of di-, tri- and tetra-propoxylated propane-1,2-diol with ammonia (--

Method	Species	Results
OECD Test No. 471: Bacterial Reverse		Negative
Mutation Test		

Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicityBased on available data, the classification criteria are not met.

Reaction products of di-, tri- and tetra-propoxylated propane-1,2-diol with ammonia (--

,		
Method	Species	Results
OECD Test No. 421:	Rat	No adverse effects
Reproduction/Developmental Toxicity	Dermal	
Screening Test		
OECD Test No. 414: Pre-natal Development	Oral	NOAEL 350 mg/kg bw/d
Toxicity Study		

STOT - single exposure Based on available data, the classification criteria are not met.

STOT - repeated exposureBased on available data, the classification criteria are not met.

Aspiration hazard Based on available data, the classification criteria are not met.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Endocrine disrupting properties No information available.

11.2.2. Other information

Other adverse effects No information available.

Note: PC-ADH-8 Multi-component adhesives and sealants This product is part of a kit Please

also refer to the SDS for the other component(s) of the kit

SECTION 12: Ecological information

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12.1. Toxicity

Ecotoxicity Harmful to aquatic life with long lasting effects.

Chemical name	Algae/aquatic	Fish	Toxicity to	Crustacea	M-Factor	M-Factor
	plants		microorganisms			(long-term)
Reaction products of	-	LC50 (96h) > 15	EC50 (3hr):	EC50 (48h) = 80		
di-, tri- and		mg/l	750mg/I OECD	mg/l (Daphnia		
tetra-propoxylated		(Oncorhynchus	209	magna)		
propane-1,2-diol with		mykiss)		OEDC 202		
ammonia		OECD 203				

12.2. Persistence and degradability

Persistence and degradability Not readily biodegradable.

Reaction products of di-, tri- and tetra-propoxylated propane-1,2-diol with ammonia (--

Method	Exposure time	Value	Results
OECD Test No. 301B: Ready	28 days	biodegradation	0 % Not readily
Biodegradability: CO2 Evolution			biodegradable
Test (TG 301 B)			-

12.3. Bioaccumulative potential

Bioaccumulation

Component Information

Chemical name	Partition coefficient
Reaction products of di-, tri- and tetra-propoxylated	1.34
propane-1,2-diol with ammonia	

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB above the

threshold of declaration.

12.6. Endocrine disrupting properties

Endocrine disrupting properties The mixture does not contain substances >= 0.1% that have endocrine disrupting

properties according to Regulation (EC) No 1907/2006, Article 59(1) or Regulation (EU)

2017/2100 or Regulation (EU) 2018/605.

12.7. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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Waste from residues/unused

products

Dispose of in accordance with local regulations. Dispose of waste in accordance with

environmental legislation.

Contaminated packaging Do not reuse empty containers.

according to EWC

Waste codes / waste designations 08 04 09* waste adhesives and sealants containing organic solvents or other dangerous

substances.

08 04 09* waste adhesives and sealants containing organic solvents or other dangerous **European Waste Catalogue**

substances

Other information Waste codes should be assigned by the user based on the application for which the

product was used.

SECTION 14: Transport information

Land transport (ADR/RID)

UN number or ID number 14.1 UN2735

14.2 UN proper shipping name Amines, liquid, corrosive, n.o.s. (Reaction products of di-, tri- and tetra-propoxylated

propane-1,2-diol with ammonia)

14.3 Transport hazard class(es)

Labels 8 14.4 Packing group

Description UN2735, Amines, liquid, corrosive, n.o.s. (Reaction products of di-, tri- and

tetra-propoxylated propane-1,2-diol with ammonia), 8, III, (E)

14.5 Environmental hazards

14.6 Special precautions for user

Special Provisions 274 Classification code C7 **Tunnel restriction code** (E) Limited quantity (LQ) 5 L **ADR Hazard Id (Kemmler** 80

Number)

IMDG

14.1 UN number or ID number UN2735

14.2 UN proper shipping name Amines, liquid, corrosive, n.o.s. (Reaction products of di-, tri- and tetra-propoxylated

propane-1,2-diol with ammonia)

14.3 Transport hazard class(es)

14.4 Packing group

Description UN2735, Amines, liquid, corrosive, n.o.s. (Reaction products of di-, tri- and

tetra-propoxylated propane-1,2-diol with ammonia), 8, III

14.5 Marine pollutant NP

14.6 Special precautions for user

Special Provisions 223, 274 Limited Quantity (LQ) 5 L EmS-No. F-A, S-B

14.7 Maritime transport in bulk according to IMO instruments

Transport in bulk according to Annex II of MARPOL and the IBC Code Not applicable

Air transport (ICAO-TI / IATA-DGR)

14.1 UN number or ID number UN2735

14.2 UN proper shipping name Amines, liquid, corrosive, n.o.s. (Reaction products of di-, tri- and tetra-propoxylated

propane-1,2-diol with ammonia)

14.3 Transport hazard class(es) 14.4 Packing group Ш

Description UN2735, Amines, liquid, corrosive, n.o.s. (Reaction products of di-, tri- and

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tetra-propoxylated propane-1,2-diol with ammonia), 8, III

14.5 Environmental hazards No.14.6 Special precautions for user

Special Provisions A3, A803
Limited quantity (LQ) 1 L

ERG Code 8L

Section 15: REGULATORY INFORMATION

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

European Union

Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACh) Regulation (EC 1907/2006)

SVHC: Substances of Very High Concern for Authorisation:

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

EU-REACH (1907/2006) - Annex XVII - Substances subject to Restriction

This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

Substance subject to authorisation per REACH Annex XIV

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV)

Export Notification requirements

This product does not contain substances which are regulated pursuant to Regulation (EC) No. 649/2012 of the European parliament and of the council concerning the export and import of dangerous chemicals above the level that triggers a labeling obligation under Regulation (EC) No 1272/2008. Therefore this product is not subject to prior informed consent notification.

Ozone-depleting substances (ODS) regulation (EC) 1005/2009

Not applicable

Persistent Organic Pollutants

Not applicable

REGULATION (EU) 2019/1148 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019 on the marketing and use of explosives precursors

Not applicable

National regulations

France

Germany

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Ordinance on Industrial Safety and Health - Germany - BetrSichV

No flammable liquids in accordance with BetrSichV

Water hazard class (WGK) slightly hazardous to water (WGK 1)

TRGS - 510 Storage Class Storage Class 8A: Combustible corrosive substances

Netherlands

List of Carcinogenic, mutagenic and reproductive toxin substances in accordance with Inspectorate SZW (Netherlands)

Not Listed

Denmark

Registration number(s) (P-no.) No information available

Norway

Registration number(s) (PRN-no.) No information available

15.2. Chemical safety assessment

Chemical Safety Assessments have been carried out by the Reach registrants for substances registered at >10 tpa. No Chemical Safety Assessment has been carried out for this mixture.

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3

H314 - Causes severe skin burns and eye damage

H318 - Causes serious eye damage

H412 - Harmful to aquatic life with long lasting effects

SVHC: Substances of Very High Concern for Authorisation:

PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances

vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances

STOT RE: Specific target organ toxicity - Repeated exposure

STOT SE: Specific target organ toxicity - Single exposure

EWC: European Waste Catalogue

LOW: List of Wastes (see http://ec.europa.eu/environment/waste/framework/list.htm)

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IATA: International Air Transport Association

ICAO: ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air

IMDG: International Maritime Dangerous Goods

RID: Regulations concerning the International Carriage of Dangerous Goods by Rail

Legend SECTION 8: Exposure controls/personal protection

TWA TWA (time-weighted average) STEL STEL (Short Term Exposure Limit)

AGW Occupational exposure limit value BGW Biological limit value Ceiling Maximum limit value Sk* Skin designation

Classification procedure			
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used		
Acute oral toxicity	Calculation method		
Acute dermal toxicity	Calculation method		
Acute inhalation toxicity - gas	Calculation method		
Acute inhalation toxicity - vapour	Calculation method		
Acute inhalation toxicity - dust/mist	Calculation method		
Skin corrosion/irritation	Calculation method		
Serious eye damage/eye irritation	Calculation method		
Respiratory sensitisation	Calculation method		

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Skin sensitisation	Calculation method	
Mutagenicity	Calculation method	
Carcinogenicity	Calculation method	
Reproductive toxicity	Calculation method	
STOT - single exposure	Calculation method	
STOT - repeated exposure	Calculation method	
Acute aquatic toxicity	Calculation method	
Chronic aquatic toxicity	Calculation method	
Aspiration hazard	Calculation method	
Ozone	Calculation method	

Key literature references and sources for data used to compile the SDS

European Food Safety Authority (EFSA)

European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)

European Chemicals Agency (ECHA) (ECHA_API)

Environmental Protection Agency

Acute Exposure Guideline Level(s) (AEGL(s))

International Uniform Chemical Information Database (IUCLID)

National Institute of Technology and Evaluation (NITE)

NIOSH (National Institute for Occupational Safety and Health)

Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme

Organisation for Economic Co-operation and Development Screening Information Data Set

Prepared By Product Safety & Regulatory Affairs

Revision date 12-Dec-2023

Training Advice No information available

Further information No information available

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

Regulation (EC) No. 1907/2006 as amended by Regulation (EU) No. 2020/878, and Regulation (EC) No. 1272/2008

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

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Annex to the Safety Data Sheet (eSDS)

ES 1	Manufacture of substance. Industrial uses	
ES 2	Formulation. Industrial uses	
ES 3	Formulation., Oil and gas exploration or production products. Industrial uses	
ES 4	Use as a reactant or intermediate. Industrial uses	
ES 5	Use as processing aid. Industrial uses	
ES 6	Oil and gas exploration or production products. Industrial uses	
ES 7	Use as laboratory chemical. Professional uses	
ES 8	Professional uses.	
ES 9	Wide dispersive outdoor use of long-life articles and materials with low release Consumer uses	
ES 10	Wide dispersive indoor use of long-life articles and materials with low release Consumer uses	

ES 1: Manufacture of substance..

1.1. Title section

Exposure Scenario name	: Manufacture of substance.	
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Environment				
CS 1	Manufacture of the substance	ERC1		
Worker				
CS 2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1		
CS 3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2		

CS 4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with	PROC3
	equivalent containment condition	

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CS 5	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b	
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CS 6 Transfer of substance or mixture into small containers (dedicated filling PROC9 line, including weighing)

CS 7 Use as laboratory reagent PROC15

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Manufacture of the substance (ERC1)

Amount used (or contained in articles), frequency and duration of use/exposure				
Annual amount used in the EU	:	16000 tonnes/year		
Daily amount per site	:	53333.333333 kg/day		
Fraction of EU tonnage used in region:	:	1		
Maximum allowable site tonnage (MSafe)	:	Daily amount per site 88,459.4 kg/day		
Critical compartment for Msafe	:	Risk from environmental exposure is driven by freshwater sediment.		

Emission days : 300

Technical and organisational conditions and measures

Sludge treatment e.g. thermal sludge reduction
Soil - minimum efficiency of 100 %

Conditions and measures related to sewage treatment plant

STP type : none

Other conditions affecting environmental exposure

Receiving surface water flow : 1,388 m3/s

Local freshwater dilution factor : 1,000

Local marine water dilution factor : 9,999

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

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Product (article) characteristics				
Covers percentage substance in the	pro	duct up to 100 %.		
Physical form of product	:	Liquid mixture		
Vapour pressure	:	89.999998 Pa		
Temperature	:	20 °C		
Amount used (or contained in artic	cles), frequency and duration of use/exposure		
Duration	:	Frequency and duration of use 480 min		
Use frequency	:	5 days/week		
Other conditions affecting workers	s ex	posure		
Body parts exposed	:	One hand face only (240 cm²)		
Indoor or outdoor use	:	Outdoor		
Professional or industrial settings	:	Industrial use		
Temperature	:	20 °C		

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

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

Wear suitable respiratory protection. Inhalation - minimum efficiency of 90 % Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

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Indoor or outdoor use : Outdoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characterist	ics		
Covers percentage substance	in the product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 480 min		
Use frequency	: 5 days/week		
Conditions and measures rel	ated to personal protection, hygiene and health evaluation		
Wear suitable respiratory proted Inhalation - minimum efficiency			
Other conditions affecting we	orkers exposure		
Body parts exposed	: One hand face only (240 cm²)		

Indoor or outdoor use : Outdoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics			
Covers percentage substance	n the product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			

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Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

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

Wear suitable respiratory protection.

Inhalation - minimum efficiency of 90 %

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

Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Outdoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics			
Covers percentage substance in the	pro	duct up to 100 %.	
Physical form of product	:	Liquid mixture	
Vapour pressure	:	89.999998 Pa	
Temperature	:	20 °C	

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

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

Wear suitable respiratory protection.

Inhalation - minimum efficiency of 90 %

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Outdoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics	
Product (article) characteristics	
Covers percentage substance in the	product up to 100 %.
Physical form of product	: Liquid mixture
Vapour pressure	: 89.999998 Pa
Temperature	: 20 °C
Amount used (or contained in arti	cles), frequency and duration of use/exposure
Duration	: Frequency and duration of use 480 min
Use frequency	: 5 days/week
Technical and organisational con-	ditions and measures
Local exhaust ventilation Inhalation - minimum efficiency of 90)%
Provide a good standard of general Inhalation - minimum efficiency of 30	ventilation (not less than 3 to 5 air changes per hour).
Other conditions affecting worker	s exposure
Body parts exposed	: One hand face only (240 cm²)
Indoor or outdoor use	: Indoor
Professional or industrial settings	: Industrial use
Temperature	: 20 °C

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Manufacture of the substance (ERC1)

Release route	Release rate	Release estimation method	
Water	0.002 %	Environmental Release Category (ERC)	
Air	0 %	Environmental Release Category (ERC)	
Soil	0.01 %	Environmental Release Category (ERC)	

Protection Target	Exposure estimate	RCR
Freshwater	0.0090334mg/L	0.602

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Freshwater sediment	0.0795845mg/kg dry weight	0.603
Marine water	0.0009039mg/L	0.064
Marine sediment	0.0079633mg/kg dry weight	0.064
Soil	0.0000545mg/kg dry weight	0.003

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.034mg/kg bw/day (EASY TRA v3.6)	0.014
inhalative	systemic	long-term	0.067mg/m³ (EASY TRA v3.6)	0.013

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.274mg/kg bw/day (EASY TRA v3.6)	0.11
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.686mg/kg bw/day (EASY TRA v3.6)	0.274

inhalative	systemic	long-term	2.012mg/m³ (EASY	0.38
		· ·	TRA v3.6)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

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Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.343mg/kg bw/day (EASY TRA v3.6)	0.137
inhalative	systemic	long-term	3.354mg/m³ (EASY TRA v3.6)	0.634

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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.

ES 2: Formulation..

2.1. Title section

Exposure Scenario name : Formulation.

Environn	nent	
CS 1	Formulation into mixture	ERC2
Worker		
CS 2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1

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CS 3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS 4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3
CS 5	Chemical production where opportunity for exposure arises	PROC4
CS 6	Mixing or blending in batch processes	PROC5
CS 7	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a
CS 8	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
CS 9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS 10	Use as laboratory reagent	PROC15

2.2. Conditions of use affecting exposure

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

Amount used (or contained in articles), frequency and duration of use/exposure				
Annual amount used in the EU	12800 tonnes/year			
Daily amount per site	42666.666667 kg/day			
Fraction of EU tonnage used in region:	1			
Maximum allowable site tonnage (MSafe)	Daily amount per site 4,401.5 tonnes/day			
Critical compartment for Msafe	Risk from environmental exposure is driven by for sediment.	reshwater		
Emission days	300			

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Conditions and measures related to sewage treatment plant			
STP type	: none		
Other conditions affecting environmental exposure			
Receiving surface water flow	: 18,000 m3/d		
Local freshwater dilution factor	: 10		
Local marine water dilution factor	: 100		

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

Product (article) characteristics			
Covers percentage substance in the	pro	duct up to 100 %.	
Physical form of product	:	Liquid mixture	
Vapour pressure	:	89.999998 Pa	
Temperature	:	20 °C	
Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	:	Frequency and duration of use 480 min	
Use frequency	:	5 days/week	
Other conditions affecting workers exposure			
Body parts exposed	:	One hand face only (240 cm²)	
Indoor or outdoor use	•	Indoor	
Professional or industrial settings	•	Industrial use	
Temperature	:	20 °C	

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

Product (article) characteristics			
Covers percentage substance in the product up to 100 %.			
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		

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Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

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Other conditions affecting workers exposure			
Body parts exposed	: One hand face only (240 cm²)		
Indoor or outdoor use	: Indoor		
Professional or industrial settings	: Industrial use		
Temperature	: 20 °C		

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

Product (article) characteristics			
Covers percentage substance in the p	oro	duct up to 100 %.	
Physical form of product	:	Liquid mixture	
Vapour pressure	:	89.99998 Pa	
Temperature	:	20 °C	
Amount used (or contained in artic	les), frequency and duration of use/exposure	
Duration	:	Frequency and duration of use 480 min	
Use frequency	:	5 days/week	
Technical and organisational condi	itio	ons and measures	
Local exhaust ventilation Inhalation - minimum efficiency of 90 °	%		
Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Inhalation - minimum efficiency of 70 %			
Conditions and measures related to	οр	ersonal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %			
Other conditions affecting workers exposure			
Body parts exposed	:	Palms of both hands (480 cm2)	
Indoor or outdoor use	:	Indoor	
Professional or industrial settings	:	Industrial use	
Temperature	:	20 °C	

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

Product (article) characteristics

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Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Inhalation - minimum efficiency of 70 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics			
Covers percentage substance i	n the product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		

Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 60 min		
Use frequency	: 5 days/week		

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Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed Both hands (960 cm²)

Indoor or outdoor use Indoor

Professional or industrial settings : Industrial use

: 20 °C Temperature

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure **Temperature** : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

: 89.999998 Pa

Duration Frequency and duration of use 60 min

Use frequency 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 95 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

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Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics			
Covers percentage substance in the	product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.99998 Pa		
Temperature	: 20 °C		
Amount used (or contained in artic	cles), frequency and duration of use/exposure		
Duration	: Frequency and duration of use 60 min		
Use frequency	: 5 days/week		
Technical and organisational cond	litions and measures		
Local exhaust ventilation Inhalation - minimum efficiency of 90	%		
Provide a good standard of general values inhalation - minimum efficiency of 30	ventilation (not less than 3 to 5 air changes per hour).		
Conditions and measures related	o personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374 Dermal - minimum efficiency of 80 %	-		
Other conditions affecting workers exposure			
Body parts exposed	: Palms of both hands (480 cm2)		
Indoor or outdoor use	: Indoor		
Professional or industrial settings	: Industrial use		
Temperature	: 20 °C		

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.

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:	Liquid mixture		
:	89.999998 Pa		
:	20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
:	Frequency and duration of use 480 min		
:	5 days/week		
	ns and measures		
Inhalation - minimum efficiency of 90 % Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %			
rs ex	posure		
:	One hand face only (240 cm²)		
:	Indoor		
:	Industrial use		
	ditio	: 89.999998 Pa : 20 °C Icles), frequency and duration of use/exposure : Frequency and duration of use 480 min : 5 days/week ditions and measures 0 % ventilation (not less than 3 to 5 air changes per hour). 0 % rs exposure : One hand face only (240 cm²) : Indoor	

2.3. Exposure estimation and reference to its source

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

Release route	Release rate	Release estimation method
Water	0 %	Environmental Release Category (ERC)
Air	0.01 %	Environmental Release Category (ERC)
Soil	0 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0001452mg/L	0.01
Freshwater sediment	0.0012796mg/kg dry weight	0.01
Marine water	0.0000151mg/L	0.001

Marine sediment	0.0001328mg/kg dry weight	0.001
Soil	0.0018473mg/kg dry weight	0.105

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.034mg/kg bw/day (EASY TRA v3.6)	0.014
inhalative	systemic	long-term	0.096mg/m³ (EASY TRA v3.6)	0.018

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.274mg/kg bw/day (EASY TRA v3.6)	0.11
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.686mg/kg bw/day (EASY TRA v3.6)	0.274
inhalative	systemic	long-term	2.013mg/m³ (EASY TRA v3.6)	0.38

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.438mg/m³ (EASY TRA v3.6)	0.272

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.438mg/m³ (EASY TRA v3.6)	0.272

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

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Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.342mg/m³ (EASY TRA v3.6)	0.254

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.335mg/m³ (EASY TRA v3.6)	0.063

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.343mg/kg bw/day (EASY TRA v3.6)	0.137
inhalative	systemic	long-term	3.354mg/m³ (EASY TRA v3.6)	0.634

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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.

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ES 3: Formulation., Oil and gas exploration or production products..

3.1. Title section

Exposu	re Scenario name : Formulation., Oil and gas exploration or produc	tion products.
Environi	ment	
		ED00
CS 1	Formulation into mixture	ERC2
Worker		
CS 2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
CS 3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS 4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3
CS 5	Chemical production where opportunity for exposure arises	PROC4
CS 6	Mixing or blending in batch processes	PROC5
CS 7	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a
CS 8	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
CS 9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS 10	Use as laboratory reagent	PROC15
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3.2. Conditions of use affecting exposure

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

Amount used (or contained in articles), frequency and duration of use/exposure			
Annual amount used in the EU	:	50 tonnes/year	
Daily amount per site	:	166.666667 kg/day	
Fraction of EU tonnage used in region:	:	1	
Maximum allowable site tonnage (MSafe)	:	Daily amount per site 294.5 kg/day	
Critical compartment for Msafe	:	Risk from environmental exposure is driven by freshwater sediment.	
Emission days	:	300	
Conditions and measures related to sewage treatment plant			
STP type	:	none	
Other conditions affecting environmental exposure			
Receiving surface water flow	:	18,000 m3/d	
Local freshwater dilution factor	:	10	
Local marine water dilution factor	:	100	

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

Product (article) characteristic	es		
Covers percentage substance in	n the product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 480 min		
Use frequency	: 5 days/week		
Other conditions affecting workers exposure			
Body parts exposed	: One hand face only (240 cm²)		

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Indoor or outdoor use	:	Indoor
Professional or industrial settings	:	Industrial use
Temperature	:	20 °C

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

Product (article) characteristics				
Covers percentage substance in the p	oro	duct up to 100 %.		
Physical form of product	:	Liquid mixture		
Vapour pressure	:	89.999998 Pa		
Temperature	:	20 °C		
Amount used (or contained in artic	Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	:	Frequency and duration of use 480 min		
Use frequency	:	5 days/week		
Conditions and measures related to	οр	ersonal protection, hygiene and health evaluation		
Wear suitable respiratory protection.	,			
Inhalation - minimum efficiency of 90 % Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %				
Other conditions affecting workers exposure				
Body parts exposed	:	Palms of both hands (480 cm2)		
Indoor or outdoor use	:	Indoor		
Professional or industrial settings	:	Industrial use		
Temperature	:	20 °C		

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	: Liquid mixture	
Vapour pressure	: 89.999998 Pa	
Temperature	: 20 °C	

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Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Inhalation - minimum efficiency of 70 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

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Other conditions affecting workers exposure		
Body parts exposed	: Palms of both hands (480 cm2)	
Indoor or outdoor use	: Indoor	
Professional or industrial settings	: Industrial use	
Temperature	: 20 °C	

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

Product (article) characteristics				
Covers percentage substance in the	pro	duct up to 100 %.		
Physical form of product	:	Liquid mixture		
Vapour pressure	:	89.99998 Pa		
Temperature	:	20 °C		
Amount used (or contained in artic	cles), frequency and duration of use/exposure		
Duration	:	Frequency and duration of use 480 min		
Use frequency	:	5 days/week		
Technical and organisational cond	litic	ons and measures		
Local exhaust ventilation Inhalation - minimum efficiency of 90	%			
	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Inhalation - minimum efficiency of 70 %			
Conditions and measures related t	Conditions and measures related to personal protection, hygiene and health evaluation			
Wear chemically resistant gloves (tes Dermal - minimum efficiency of 90 %	ted	to EN374) in combination with 'basic' employee training.		
Other conditions affecting workers exposure				
Body parts exposed	:	Palms of both hands (480 cm2)		
Indoor or outdoor use	:	Indoor		
Professional or industrial settings	:	Industrial use		
Temperature	:	20 °C		

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

Product (article) characteristics

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Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Technical and organisational conditions and measures

Local exhaust ventilation

Use frequency

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

: 5 days/week

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics			
Covers percentage substance i	n the product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 60 min		
Use frequency	: 5 days/week		

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Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 95 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear suitable gloves tested to EN374.
Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

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Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics	
Covers percentage substance in	he product up to 100 %.
Physical form of product	: Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

3.3. Exposure estimation and reference to its source

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

Release route	Release rate	Release estimation method
Water	0.1 %	Environmental Release Category (ERC)

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Air	0.1 %	Environmental Release Category (ERC)
Soil	0.05 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0084779mg/L	0.565
Freshwater sediment	0.0746905mg/kg dry weight	0.566
Marine water	0.0008483mg/L	0.06
Marine sediment	0.0074739mg/kg dry weight	0.06
Soil	0.0001027mg/kg dry weight	0.006

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.034mg/kg bw/day (EASY TRA v3.6)	0.014
inhalative	systemic	long-term	0.096mg/m³ (EASY TRA v3.6)	0.018

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.274mg/kg bw/day (EASY TRA v3.6)	0.11
inhalative	systemic	long-term	0.958mg/m³ (EASY TRA v3.6)	0.181

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.686mg/kg bw/day (EASY TRA v3.6)	0.274
inhalative	systemic	long-term	2.013mg/m³ (EASY TRA v3.6)	0.38

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR	
		maioaioi	Johnnaco		

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dermal	systemic	<u> </u>	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.438mg/m³ (EASY TRA v3.6)	0.272

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.438mg/m³ (EASY TRA v3.6)	0.272

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.342mg/m³ (EASY TRA v3.6)	0.254

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.335mg/m³ (EASY TRA v3.6)	0.063

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.343mg/kg bw/day (EASY TRA v3.6)	0.137

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PROC2

inhalative	systemic	long-term	3.354mg/m³ (EASY TRA v3.6)	0.634

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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.

ES 4: Use as a reactant or intermediate...

containment conditions

4.1. Title section

CS 4

Exposure Scenario name

Environ	ment	
CS 1	Use of intermediate	ERC6a
CS 2	Use of reactive processing aid at industrial site (no inclusion into or onto article)	ERC6b
Worker		
CS 3	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1

: Use as a reactant or intermediate.

CS 5	Manufacture or formulation in the chemical industry in closed batch	PROC3
	processes with occasional controlled exposure or processes with equivalent containment condition	
	•	

Chemical production or refinery in closed continuous process with

occasional controlled exposure or processes with equivalent

CS 6 Chemical production where opportunity for exposure arises PROC4	
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CS 7	Mixing or blending in batch processes	PROC5
CS 8	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a
CS 9	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
CS 10	Use as laboratory reagent	PROC15
CS 11	Use of fuels	PROC16

4.2. Conditions of use affecting exposure

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

Amount used (or contained in articles), frequency and duration of use/exposure			
Annual amount used in the EU	:	3200 tonnes/year	
Daily amount per site	:	16000 kg/day	
Fraction of EU tonnage used in region:	•	1	
Maximum allowable site tonnage (MSafe)	:	Daily amount per site 1,650.6 tonnes/day	
Critical compartment for Msafe	:	Risk from environmental exposure is driven by freshwater sediment.	
Emission days	:	200	
Conditions and measures related t	:0 S	ewage treatment plant	
STP type	:	none	
Other conditions affecting environmental exposure			
Receiving surface water flow	:	18,000 m3/d	
Local freshwater dilution factor	:	10	
Local marine water dilution factor	:	100	

4.2.2. Control of environmental exposure: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC6b)

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Amount used (or contained in articles), frequency and duration of use/exposure			
Annual amount used in the EU	: 3200 tonnes/year		
Daily amount per site	: 16000 kg/day		
Fraction of EU tonnage used in region:	: 1		
Maximum allowable site tonnage (MSafe)	: Daily amount per site 1,650.6 tonnes/day		
Critical compartment for Msafe	: Risk from environmental exposure is driven by freshwater sediment.		
Emission days	: 200		
Conditions and measures related	to sewage treatment plant		
STP type	: none		
Other conditions affecting environ	nmental exposure		
Receiving surface water flow	: 18,000 m3/d		
Local freshwater dilution factor	: 10		
Local marine water dilution factor	: 100		

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

Product (article) characteristics			
Covers percentage substance in	the product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.99998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 480 min		
Use frequency	: 5 days/week		
Technical and organisational c	onditions and measures		
Provide a good standard of gene Inhalation - minimum efficiency of	ral ventilation (not less than 3 to 5 air changes per hour). of 30 %		
Other conditions affecting workers exposure			
Body parts exposed	: One hand face only (240 cm²)		

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Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics			
Covers percentage substance in	he product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 480 min		
Use frequency	: 5 days/week		

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

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Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

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Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Inhalation - minimum efficiency of 70 %

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

Wear suitable gloves tested to EN374.
Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics		
Covers percentage substance in	the product up to 100 %.	
Physical form of product	: Liquid mixture	
Vapour pressure	: 89.999998 Pa	
Temperature	: 20 °C	

Amount used (or contained in articles), frequency and duration of use/exposu	Amount used
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Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Inhalation - minimum efficiency of 70 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

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Temperature : 20 °C

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

Product (article) characteristics			
Covers percentage substance in t	he product up to 100 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 60 min		
Use frequency	: 5 days/week		
Technical and organisational co	onditions and measures		
Local exhaust ventilation Inhalation - minimum efficiency of	90 %		
Provide a good standard of gener Inhalation - minimum efficiency of	ral ventilation (not less than 3 to 5 air changes per hour). f 30 %		

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristi	es S	
Covers percentage substance in the product up to 100 %.		
Physical form of product	: Liquid mixture	
Vapour pressure	: 89.999998 Pa	

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Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 95 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

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

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

Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

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Other conditions affecting workers exposure			
Body parts exposed	:	One hand face only (240 cm²)	
Indoor or outdoor use	:	Indoor	
Professional or industrial settings	:	Industrial use	
Temperature	:	20 °C	

4.2.11. Control of worker exposure: Use of fuels (PROC16)

Product (article) characteristics				
Covers percentage substance	in the product up to 100 %.			
Physical form of product	: Liquid mixture			
Vapour pressure	: 89.999998 Pa			
Temperature	: 20 °C			
Amount used (or contained in articles), frequency and duration of use/exposure Duration : Frequency and duration of use 480 min				
Use frequency	: 5 days/week			
Technical and organisational conditions and measures				
Local exhaust ventilation Inhalation - minimum efficiency of 90 %				
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).				

Inhalation - minimum efficiency of 30 %				
Other conditions affecting workers exposure				
Body parts exposed	:	One hand face only (240 cm²)		
Indoor or outdoor use	:	Indoor		
Professional or industrial settings : Industrial use				
Temperature	:	20 °C		

4.3. Exposure estimation and reference to its source

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

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Water	0 %	Environmental Release Category (ERC)
Air	0.01 %	Environmental Release Category (ERC)
Soil	0 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0001452mg/L	0.01
Freshwater sediment	0.0012796mg/kg dry weight	0.01
Marine water	0.0000151mg/L	0.001
Marine sediment	0.0001328mg/kg dry weight	0.001
Soil	0.0004857mg/kg dry weight	0.028

4.3.2. Environmental release and exposure: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC6b)

Release route	Release rate	Release estimation method
Water	0 %	Environmental Release Category (ERC)
Air	0.01 %	Environmental Release Category (ERC)
Soil	0 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0001452mg/L	0.01
Freshwater sediment	0.0012796mg/kg dry weight	0.01
Marine water	0.0000151mg/L	0.001
Marine sediment	0.0001328mg/kg dry weight	0.001
Soil	0.0004857mg/kg dry weight	0.028

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.034mg/kg bw/day (EASY TRA v3.6)	0.014

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inhalative	systemic	long-term	0.067mg/m³ (EASY TRA v3.6)	0.013
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4.3.4. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.274mg/kg bw/day (EASY TRA v3.6)	0.11
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.686mg/kg bw/day (EASY TRA v3.6)	0.274
inhalative	systemic	long-term	2.013mg/m³ (EASY TRA v3.6)	0.38

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.438mg/m³ (EASY TRA v3.6)	0.272

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.438mg/m³ (EASY TRA v3.6)	0.272

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.342mg/m³ (EASY TRA v3.6)	0.254

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.335mg/m³ (EASY TRA v3.6)	0.063

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.343mg/kg bw/day (EASY TRA v3.6)	0.137
inhalative	systemic	long-term	3.354mg/m³ (EASY TRA v3.6)	0.634

4.3.11. Worker exposure: Use of fuels (PROC16)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.343mg/kg bw/day (EASY TRA v3.6)	0.137
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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.

ES 5: Use as processing aid..

5.1. Title section

Exposure Scenario name :	Use as processing aid.
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Environment				
CS 1	Use at industrial site leading to inclusion into/onto article	ERC5		
CS 2	Use of reactive processing aid at industrial site (no inclusion into or onto article)	ERC6b		
CS 3	Use of functional fluid at industrial site	ERC7		
Worker				
CS 4	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1		
CS 5	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2		
CS 6	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3		
CS 7	Chemical production where opportunity for exposure arises	PROC4		
CS 8	Mixing or blending in batch processes	PROC5		
CS 9	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a		
CS 10	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b		
CS 11	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9		
CS 12	Use of blowing agents in manufacture of foam	PROC12		
CS 13	Treatment of articles by dipping and pouring	PROC13		
UU 13	Treatment of articles by dipping and pouring	FROOIS		

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CS 14	Tabletting, compression, extrusion, pelettisation, granulation	PROC14
CS 15	Use as laboratory reagent	PROC15

5.2. Conditions of use affecting exposure

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

Amount used (or contained in artic	cles)	, frequency and duration of use/exposure
Annual amount used in the EU	:	12800 tonnes/year
Daily amount per site	:	64000 kg/day
Fraction of EU tonnage used in region:	:	1
Maximum allowable site tonnage (MSafe)	:	Daily amount per site 6,602.3 tonnes/day
Critical compartment for Msafe	:	Risk from environmental exposure is driven by freshwater sediment.
Emission days	:	200
Conditions and measures related	to se	ewage treatment plant
STP type	:	none
Other conditions affecting enviror	nmer	ital exposure
Receiving surface water flow	:	18,000 m3/d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

5.2.2. Control of environmental exposure: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC6b)

Amount used (or contained in articles), frequency and duration of use/exposure			
Annual amount used in the EU	:	12800 tonnes/year	
Daily amount per site	:	64000 kg/day	
Fraction of EU tonnage used in region:	:	1	
Maximum allowable site tonnage (MSafe)	:	Daily amount per site 6,602.3 tonnes/day	
Critical compartment for Msafe	:	Risk from environmental exposure is driven by freshwater	

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		sediment.	
Emission days	:	200	
Conditions and measures related	to se	ewage treatment plant	
STP type	:	none	
Other conditions affecting environmental exposure			
Receiving surface water flow	:	18,000 m3/d	
Local freshwater dilution factor	:	10	
Local marine water dilution factor	:	100	

5.2.3. Control of environmental exposure: Use of functional fluid at industrial site (ERC7)

Amount used (or contained in articles), frequency and duration of use/exposure					
Annual amount used in the EU	:	12800 tonnes/year			
Daily amount per site	:	64000 kg/day			
Fraction of EU tonnage used in region:	:	1			
Maximum allowable site tonnage (MSafe)	:	Daily amount per site 6,602.3 tonnes/day			
Critical compartment for Msafe	:	Risk from environmental exposure is driven by freshwater sediment.			
Emission days	:	200			
Conditions and measures related to sewage treatment plant					
STP type	:	none			
Other conditions affecting environmental exposure					
Receiving surface water flow	:	18,000 m3/d			
Local freshwater dilution factor	:	10			
Local marine water dilution factor	:	100			

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

Product (article) characteristics

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Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

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Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics					
Covers percentage substance in the	product up to 25 %.				
Physical form of product	: Liquid mixture				
Vapour pressure	: 89.999998 Pa				
Temperature	: 20 °C				
Amount used (or contained in articles), frequency and duration of use/exposure					
Duration	: Frequency and duration of use 480 min				
Use frequency	: 5 days/week				
Technical and organisational conditions and measures					
Local exhaust ventilation Inhalation - minimum efficiency of 9	O %				
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %					
Other conditions affecting workers exposure					
Body parts exposed	: One hand face only (240 cm²)				
Indoor or outdoor use	: Indoor				
Professional or industrial settings	: Industrial use				
Temperature	: 20 °C				

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

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Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.99998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

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Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

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Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 95 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 25 %.

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Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

5.2.12. Control of worker exposure: Use of blowing agents in manufacture of foam (PROC12)

Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

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Temperature

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Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).
Inhalation - minimum efficiency of 30 %

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

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

20 °C

Product (article) characteristics			
Covers percentage substance in the pr	oduct up to 25 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in article	es), frequency and duration of use/exposure		
Duration	: Frequency and duration of use 480 min		
Use frequency	: 5 days/week		
Technical and organisational condit	ions and measures		
Local exhaust ventilation Inhalation - minimum efficiency of 90 %			
Provide a good standard of controlled Inhalation - minimum efficiency of 70 %	ventilation (10 to 15 air changes per hour).		
Conditions and measures related to	personal protection, hygiene and health evaluation		
Wear chemically resistant gloves (teste Dermal - minimum efficiency of 90 %	d to EN374) in combination with 'basic' employee training.		
Other conditions affecting workers exposure			
Body parts exposed	: Palms of both hands (480 cm2)		
Indoor or outdoor use	: Indoor		
Professional or industrial settings	: Industrial use		
Temperature	: 20 °C		

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

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Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Technical and organisational conditions and measures

Local exhaust ventilation

Use frequency

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

5 days/week

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

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Technical and organisational cond	ditio	ons and measures	
Local exhaust ventilation Inhalation - minimum efficiency of 90) %		
Provide a good standard of general Inhalation - minimum efficiency of 30		ilation (not less than 3 to 5 air changes per hour).	
Other conditions affecting workers exposure			
Body parts exposed	:	One hand face only (240 cm²)	
Indoor or outdoor use	:	Indoor	
Professional or industrial settings	:	Industrial use	
Temperature	:	20 °C	

5.3. Exposure estimation and reference to its source

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

Release route	Release rate	Release estimation method
Water	0 %	Environmental Release Category (ERC)
Air	0.01 %	Environmental Release Category (ERC)
Soil	0 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0001452mg/L	0.01
Freshwater sediment	0.0012796mg/kg dry weight	0.01
Marine water	0.0000151mg/L	0.001
Marine sediment	0.0001328mg/kg dry weight	0.001
Soil	0.0018473mg/kg dry weight	0.105

5.3.2. Environmental release and exposure: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC6b)

Release route	Release rate	Release estimation method
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Water	0 %	Environmental Release Category (ERC)
Air	0.01 %	Environmental Release Category (ERC)
Soil	0 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0001452mg/L	0.01
Freshwater sediment	0.0012796mg/kg dry weight	0.01
Marine water	0.0000151mg/L	0.001
Marine sediment	0.0001328mg/kg dry weight	0.001
Soil	0.0018473mg/kg dry weight	0.105

5.3.3. Environmental release and exposure: Use of functional fluid at industrial site (ERC7)

Release route	Release rate	Release estimation method
Water	0 %	Environmental Release Category (ERC)
Air	0.01 %	Environmental Release Category (ERC)
Soil	0 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0001452mg/L	0.01
Freshwater sediment	0.0012796mg/kg dry weight	0.01
Marine water	0.0000151mg/L	0.001
Marine sediment	0.0001328mg/kg dry weight	0.001
Soil	0.0018473mg/kg dry weight	0.105

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.021mg/kg bw/day (EASY TRA v3.6)	0.008
inhalative	systemic	long-term	0.057mg/m³ (EASY TRA v3.6)	0.011

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.165mg/kg bw/day (EASY TRA v3.6)	0.066
inhalative	systemic	long-term	0.403mg/m³ (EASY TRA v3.6)	0.076

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.411mg/kg bw/day (EASY TRA v3.6)	0.165
inhalative	systemic	long-term	1.208mg/m³ (EASY	0.228
			TRA v3.6)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.823mg/kg bw/day (EASY TRA v3.6)	0.329
inhalative	systemic	long-term	2.012mg/m³ (EASY TRA v3.6)	0.38

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.823mg/kg bw/day (EASY TRA v3.6)	0.329
inhalative	systemic	long-term	2.012mg/m³ (EASY TRA v3.6)	0.38

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

	1			
Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.646mg/kg bw/day (EASY TRA v3.6)	0.658
inhalative	systemic	long-term	0.805mg/m³ (EASY TRA v3.6)	0.152

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

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Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.823mg/kg bw/day (EASY TRA v3.6)	0.329
inhalative	systemic	long-term	0.201mg/m³ (EASY TRA v3.6)	0.038

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.823mg/kg bw/day (EASY TRA v3.6)	0.329
inhalative	systemic	long-term	0.403mg/m³ (EASY TRA v3.6)	0.076

5.3.12. Worker exposure: Use of blowing agents in manufacture of foam (PROC12)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.206mg/kg bw/day (EASY TRA v3.6)	0.082
inhalative	systemic	long-term	0.805mg/m³ (EASY TRA v3.6)	0.152

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.823mg/kg bw/day (EASY TRA v3.6)	0.329
inhalative	systemic	long-term	1.725mg/m³ (EASY TRA v3.6)	0.326

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

(110014)				
Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.411mg/kg bw/day (EASY TRA v3.6)	0.165
inhalative	systemic	long-term	2.012mg/m³ (EASY TRA v3.6)	0.38

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

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	Exposure route	Health effect	Exposure	Exposure	RCR
	Exposure route	ricaitii ciicot	LAPOSUIC	LAPOSUIC	I COIC
			indicator	estimate	
			indicator	Collinate	

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PROC4

dermal	systemic	<u> </u>	0.206mg/kg bw/day (EASY TRA v3.6)	0.082
inhalative	systemic	long-term	2.012mg/m³ (EASY TRA v3.6)	0.38

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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.

ES 6: Oil and gas exploration or production products..

6.1. Title section

CS₅

Exposure Scenario name	: Oil and gas exploration or production products.
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Environment				
CS 1	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)	ERC4		
Worker				
CS 2	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1		
CS 3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2		
CS 4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3		

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Chemical production where opportunity for exposure arises

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CS 6	Mixing or blending in batch processes	PROC5
CS 7	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a
CS 8	Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
CS 9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS 10	Use as laboratory reagent	PROC15

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

Amount used (or contained in artic	eles), frequency and duration of use/exposure	
Annual amount used in the EU	:	50 tonnes/year	
Daily amount per site	:	166.666667 kg/day	
Fraction of EU tonnage used in region:	:	1	
Maximum allowable site tonnage (MSafe)	:	Daily amount per site 294.5 kg/day	
Critical compartment for Msafe	:	Risk from environmental exposure is driven by freshwater sediment.	
Emission days	:	300	
Conditions and measures related to sewage treatment plant			
STP type	:	none	
Other conditions affecting environmental exposure			
Receiving surface water flow	:	18,000 m3/d	
Local freshwater dilution factor	:	10	
Local marine water dilution factor	:	100	

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

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Product (article) characteristics					
Covers percentage substance in the	Covers percentage substance in the product up to 100 %.				
Physical form of product	:	Liquid mixture			
Vapour pressure	:	89.999998 Pa			
Temperature	:	20 °C			
Amount used (or contained in articles), frequency and duration of use/exposure					
Duration	:	Frequency and duration of use 480 min			
Use frequency	:	5 days/week			
Other conditions affecting workers exposure					
Body parts exposed	:	One hand face only (240 cm²)			
Indoor or outdoor use	:	Indoor			
Professional or industrial settings	:	Industrial use			
Temperature	:	20 °C			

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

Product (article) characteristics					
Covers percentage substance in the p	Covers percentage substance in the product up to 100 %.				
Physical form of product	:	Liquid mixture			
Vapour pressure	:	89.999998 Pa			
Temperature	:	20 °C			
Amount used (or contained in article	les), frequency and duration of use/exposure			
Duration	:	Frequency and duration of use 480 min			
Use frequency	:	5 days/week			
Conditions and measures related to personal protection, hygiene and health evaluation					
Wear suitable respiratory protection. Inhalation - minimum efficiency of 90 %					
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %					
Other conditions affecting workers exposure					
Body parts exposed	:	Palms of both hands (480 cm2)			

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Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics				
Covers percentage substance in	the product up to 100 %.			
Physical form of product	: Liquid mixture			
Vapour pressure	: 89.999998 Pa			
Temperature	: 20 °C			
Amount used (or contained in articles), frequency and duration of use/exposure				
Duration	: Frequency and duration of use 480 min			
Use frequency	: 5 days/week			

Local exhaust ventilation Inhalation - minimum efficiency of 90 % Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 % Other conditions affecting workers exposure Body parts exposed : One hand face only (240 cm²) Indoor or outdoor use : Indoor

Technical and organisational conditions and measures

Professional or industrial settings

Temperature

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

Industrial use

20 °C

Product (article) characteristics				
Covers percentage substance in the product up to 100 %.				
Physical form of product	: Liquid mixture			
Vapour pressure	: 89.999998 Pa			

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Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Inhalation - minimum efficiency of 70 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Inhalation - minimum efficiency of 70 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics				
Covers percentage substance in the product up to 100 %.				
Physical form of product	: Liquid mixture			
Vapour pressure	: 89.999998 Pa			
Temperature	: 20 °C			

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteris	tics			
Covers percentage substance	in the product up to 100 %.			
Physical form of product	: Liquid mixture			
Vapour pressure	: 89.99998 Pa			
Temperature	: 20 °C			
Amount used (or contained	Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 60 min			
Use frequency	: 5 days/week			
Technical and organisational conditions and measures				
Local exhaust ventilation Inhalation - minimum efficiency of 95 %				
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %				
Conditions and measures related to personal protection, hygiene and health evaluation				

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %				
Other conditions affecting workers exposure				
Body parts exposed	:	Both hands (960 cm²)		
Indoor or outdoor use	:	Indoor		
Professional or industrial settings : Industrial use				
Temperature	:	20 °C		

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

Product (article) characteristics				
Covers percentage substance in the product up to 100 %.				
Physical form of product	: Liquid mixture			
Vapour pressure	: 89.999998 Pa			
Temperature	: 20 °C			

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Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 60 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

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

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Industrial use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 90 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

Other conditions affecting workers exposure

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Body parts exposed		One hand face only (240 cm²)
Indoor or outdoor use	:	Indoor
Professional or industrial settings		Industrial use
Temperature	:	20 °C

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

Release route	Release rate	Release estimation method
Water	0.1 %	Environmental Release Category (ERC)
Air	0.1 %	Environmental Release Category (ERC)
Soil	0.05 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0084779mg/L	0.565
Freshwater sediment	0.0746905mg/kg dry weight	0.566

Marine water	0.0008483mg/L	0.06
Marine sediment	0.0074739mg/kg dry weight	0.06
Soil	0.0001027mg/kg dry weight	0.006

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.034mg/kg bw/day (EASY TRA v3.6)	0.014
inhalative	systemic	long-term	0.096mg/m³ (EASY TRA v3.6)	0.018

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.274mg/kg bw/day (EASY TRA v3.6)	0.11

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inhalative	systemic	long-term	0.958mg/m³ (EASY TRA v3.6)	0.181
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6.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.686mg/kg bw/day (EASY TRA v3.6)	0.274
inhalative	systemic	long-term	2.013mg/m³ (EASY TRA v3.6)	0.38

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	1.438mg/m³ (EASY TRA v3.6)	0.272

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

ciois: Worker exposure: Mixing or biending in baton processes (i 1000)					
Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR	
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549	
inhalative	systemic	long-term	1.438mg/m³ (EASY	0.272	

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

dedicated facilities (1 17000a)					
Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR	
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549	
inhalative	systemic	long-term	1.342mg/m³ (EASY TRA v3.6)	0.254	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.335mg/m³ (EASY TRA v3.6)	0.063

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6.3.9. Worker exposure: Transfer of substance or mixture into small containers (dedicated

filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.371mg/kg bw/day (EASY TRA v3.6)	0.549
inhalative	systemic	long-term	0.671mg/m³ (EASY TRA v3.6)	0.127

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.343mg/kg bw/day (EASY TRA v3.6)	0.137
inhalative	systemic	long-term	3.354mg/m³ (EASY TRA v3.6)	0.634

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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.

ES 7: Use as laboratory chemical..

7.1. Title section

Exposure Scenario name	:	Use as laboratory chemical.
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Environment		
CS 1	Widespread use of reactive processing aid (no inclusion into or onto article, indoor)	ERC8b
Worker		
CS 2	Use as laboratory reagent	PROC15

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7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC8b)

Amount used (or contained in articles), frequency and duration of use/exposure		
Annual amount used in the EU	: 1 tonnes/year	
Daily amount per site	: 0.000548 kg/day	
Fraction of EU tonnage used in region:	: 0.1	
Maximum allowable site tonnage (MSafe)	: Daily amount per site 0.056314 kg/day	
Critical compartment for Msafe	 Risk from environmental exposure is driven by freshwater sediment. 	
Emission days	: 365	
Conditions and measures related	to sewage treatment plant	
STP type	: none	
Other conditions affecting environ	nmental exposure	
Receiving surface water flow	: 18,000 m3/d	
Local freshwater dilution factor	: 10	
Local marine water dilution factor	: 100	

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

Product (article) characteristics

Covers percentage substance in the product up to 25 %.			
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
Amount used (or contained in	articles), frequency and duration of use/exposure		
Amount used (or contained in Duration	articles), frequency and duration of use/exposure : Frequency and duration of use 480 min		
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Local exhaust ventilation Inhalation - minimum efficiency of 8	0 %	
Provide a good standard of general Inhalation - minimum efficiency of 3	ventilation (not less than 3 to 5 air changes per hour). 0 %	
Other conditions affecting workers exposure		
Body parts exposed	: One hand face only (240 cm²)	
Indoor or outdoor use	: Indoor	
Professional or industrial settings	: Professional use	
Temperature	· 20 °C	

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure: Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC8b)

Release route	Release rate	Release estimation method
Water	2 %	Environmental Release Category (ERC)
Air	0.1 %	Environmental Release Category (ERC)
Soil	0 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0001458mg/L	0.01
Freshwater sediment	0.0012844mg/kg dry weight	0.01
Marine water	0.0000151mg/L	0.001
Marine sediment	0.0001333mg/kg dry weight	0.001

Soil	0.0000318mg/kg dry weight	0.002

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.206mg/kg bw/day (EASY TRA v3.6)	0.082
inhalative	systemic	long-term	4.025mg/m³ (EASY TRA v3.6)	0.761

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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.

ES 8: Professional uses.

8.1. Title section

Exposure Scenario name : Professional uses.		
Environi	ment	
CS 1	Widespread use leading to inclusion into/onto article (indoor)	ERC8c
<u> </u>	widespread use leading to inclusion into/onto article (indoor)	ENCOC
CS 2	Widespread use leading to inclusion into/onto article (outdoor)	ERC8f
Worker		
CS 3	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
CS 4	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3
CS 5	Chemical production where opportunity for exposure arises	PROC4
	one mode production where opportunity for expectate drives	11004
CS 6	Mixing or blending in batch processes	PROC5
CS 7	Transfer of substance or mixture (charging/discharging) at non dedicated-facilities	PROC8a
CS 8	Roller application or brushing	PROC10

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CS 9	Non-industrial spraying	PROC11
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8.2. Conditions of use affecting exposure

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

Amount used (or contained in articles), frequency and duration of use/exposure		
Annual amount used in the EU	:	1000 tonnes/year
Daily amount per site	:	0.888889 kg/day
Fraction of EU tonnage used in region:	:	0.1

:	Daily amount per site			
	12.9 kg/day			
:	Risk from environmental exposure is driven by freshwater sediment.			
:	225			
Conditions and measures related to sewage treatment plant				
:	none			
Other conditions affecting environmental exposure				
:	18,000 m3/d			
:	10			
:	100			
	: : : :			

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

Amount used (or contained in articles), frequency and duration of use/exposure			
Annual amount used in the EU	: 1000 tonnes/year		
Daily amount per site	: 0.888889 kg/day		
Fraction of EU tonnage used in region:	: 0.1		
Maximum allowable site tonnage (MSafe)	: Daily amount per site 22.6 kg/day		
Critical compartment for Msafe	: Risk from environmental exposure is driven by freshwater sediment.		

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Emission days : 225

Conditions and measures related to sewage treatment plant

STP type : none

Other conditions affecting environmental exposure

Receiving surface water flow : 18,000 m3/d

Local freshwater dilution factor : 10

Local marine water dilution factor : 100

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

Product (article) characteristics			
Covers percentage substance in the pr	roduct up to 25 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in article	es), frequency and duration of use/exposure		
Duration	: Frequency and duration of use 480 min		
Use frequency	: 5 days/week		
Technical and organisational condit	ions and measures		
Provide a good standard of general ve Inhalation - minimum efficiency of 30 %	ntilation (not less than 3 to 5 air changes per hour).		
Conditions and measures related to	personal protection, hygiene and health evaluation		
Wear suitable respiratory protection. Inhalation - minimum efficiency of 90 %			
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %			
Other conditions affecting workers exposure			
Body parts exposed	: Palms of both hands (480 cm2)		
Indoor or outdoor use	: Indoor		
Professional or industrial settings	: Professional use		
Temperature	: 20 °C		

8.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in

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closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Product (article) characteristi	CS CS		
Covers percentage substance i	n the product up to 25 %.		
Physical form of product	: Liquid mixture		
Vapour pressure	: 89.999998 Pa		
Temperature	: 20 °C		
Amount used (or contained in articles), frequency and duration of use/exposure			
Duration	: Frequency and duration of use 480 min		
Use frequency	: 5 days/week		

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 80 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

Other conditions affecting workers exposure

Body parts exposed : One hand face only (240 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Professional use

Temperature : 20 °C

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

Product (article) characterist	cs	
Covers percentage substance	n the product up to 25 %.	
Physical form of product	: Liquid mixture	
Vapour pressure	: 89.999998 Pa	
Temperature	: 20 °C	
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	: Frequency and duration of use 480 min	
Use frequency	: 5 days/week	

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Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 80 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear suitable respiratory protection.

Inhalation - minimum efficiency of 90 %

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 80 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Professional use

Temperature : 20 °C

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

Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 80 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear suitable respiratory protection. Inhalation - minimum efficiency of 90 %

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

Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Palms of both hands (480 cm2)

Indoor or outdoor use : Indoor

Professional or industrial settings : Professional use

Temperature : 20 °C

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

Product (article) characteristics		
Physical form of product	:	Liquid mixture
Vapour pressure	:	89.99998 Pa
Temperature	:	20 °C

Amount used (or contained in art	cles), frequency and duration of use/exposure		
Duration	: Frequency and duration of use 60 min		
Use frequency	: 5 days/week		
Technical and organisational con	ditions and measures		
Local exhaust ventilation Inhalation - minimum efficiency of 80) %		
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %			
Conditions and measures related	to personal protection, hygiene and health evaluation		
Wear chemically resistant gloves (te Dermal - minimum efficiency of 90 %	sted to EN374) in combination with 'basic' employee training.		
Other conditions affecting worker	s exposure		
Body parts exposed	: Both hands (960 cm²)		
Indoor or outdoor use	: Indoor		
Professional or industrial settings	: Professional use		
Temperature	: 20 °C		

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

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Product (article) characteristics

Covers percentage substance in the product up to 25 %.

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 480 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 80 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Inhalation - minimum efficiency of 30 %

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

Wear suitable respiratory protection.

Inhalation - minimum efficiency of 95 %

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

Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands (960 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Professional use

Temperature : 20 °C

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

Product (article) characteristics

Physical form of product : Liquid mixture

Vapour pressure : 89.999998 Pa

Temperature : 20 °C

Amount used (or contained in articles), frequency and duration of use/exposure

Duration : Frequency and duration of use 240 min

Use frequency : 5 days/week

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Technical and organisational conditions and measures

Local exhaust ventilation

Inhalation - minimum efficiency of 80 %

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %

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

Wear suitable respiratory protection.

Inhalation - minimum efficiency of 95 %

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of 98 %

Other conditions affecting workers exposure

Body parts exposed : Both hands and upper wrists (1500 cm²)

Indoor or outdoor use : Indoor

Professional or industrial settings : Professional use

Temperature : 20 °C

8.3. Exposure estimation and reference to its source

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

Release route	Release rate Release estimation method	
Water	2 % Environmental Release C (ERC)	
Air	2.2 % Environmental Release (ERC)	
Soil	0.5 %	Environmental Release Category (ERC)

Protection Target	Exposure estimate	RCR
Freshwater	0.0010341mg/L	0.069
Freshwater sediment	0.0091101mg/kg dry weight	0.069
Marine water	0.000104mg/L	0.007
Marine sediment	0.0009158mg/kg dry weight	0.007
Soil	0.0000318mg/kg dry weight	0.002

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

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Release route	Release rate Release estimation method		
Water	1 % Environmental Release Cate (ERC)		
Air	2.2 %	Environmental Release Category (ERC)	
Soil	0.5 %	Environmental Release Category (ERC)	

Protection Target	Exposure estimate	RCR
Freshwater	0.0005896mg/L	0.039
Freshwater sediment	0.0051948mg/kg dry weight	0.039
Marine water	0.0000595mg/L	0.004
Marine sediment	0.0005243mg/kg dry weight	0.004
Soil	0.0000318mg/kg dry weight	0.002

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.165mg/kg bw/day (EASY TRA v3.6)	0.066
inhalative	systemic	long-term	2.013mg/m³ (EASY TRA v3.6)	0.38

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.411mg/kg bw/day (EASY TRA v3.6)	0.165
inhalative	systemic	long-term	2.415mg/m³ (EASY TRA v3.6)	0.457

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.823mg/kg bw/day (EASY TRA v3.6)	0.329
inhalative	systemic	long-term	0.805mg/m³ (EASY TRA v3.6)	0.152

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.823mg/kg bw/day (EASY TRA v3.6)	0.329
inhalative	systemic	long-term	0.805mg/m³ (EASY TRA v3.6)	0.152

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.343mg/kg bw/day (EASY TRA v3.6)	0.137
inhalative	systemic	long-term	1.677mg/m³ (EASY TRA v3.6)	0.317

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	1.646mg/kg bw/day	0.658

			(EASY TRA v3.6)	
inhalative	systemic	long-term	1.006mg/m³ (EASY TRA v3.6)	0.19

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.536mg/kg bw/day (EASY TRA v3.6)	0.214
inhalative	systemic	long-term	1.006mg/m³ (EASY TRA v3.6)	0.19

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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.

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ES 9: Wide dispersive outdoor use of long-life articles and materials with low releasePlastic articles (AC13); Consumer uses (SU21).

9.1. Title section

Exposure Scenario name	: Wide dispersive outdoor use of long-life articles and materials with low release
Structured Short Title	: Plastic articles (AC13); Consumer uses (SU21).

Environment				
CS 1 Widespread use of articles with low release (outdoor)	ERC10a			
Consumer				
CS 2 Plastic articles	AC13			

9.2. Conditions of use affecting exposure

9.2.1. Control of environmental exposure: Widespread use of articles with low release (outdoor) (ERC10a)

9.2.2. Control of consumer exposure: Plastic articles (AC13)

Plastic, larger articles (plastic chair, PVC-flooring, lawn mower, PC) (AC13-1)

Product (article) characteristics		
Vapour pressure	:	89.999998 Pa
Temperature	:	20 °C

9.3. Exposure estimation and reference to its source

Release estimation method:

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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

ES 10: Wide dispersive indoor use of long-life articles and materials with low releasePlastic articles (AC13); Consumer uses (SU21).

10.1. Title section

Exposure Scenario name	: Wide dispersive indoor use of long-life articles and materials with low release
Structured Short Title	: Plastic articles (AC13); Consumer uses (SU21).

Environment				
CS 1 Widespread use of articles with low release (indoor)	ERC11a			
Consumer				
CS 2 Plastic articles	AC13			

10.2. Conditions of use affecting exposure

10.2.1. Control of environmental exposure: Widespread use of articles with low release (indoor) (ERC11a)

10.2.2. Control of consumer exposure: Plastic articles (AC13)

Plastic, larger articles (plastic chair, PVC-flooring, lawn mower, PC) (AC13-1)

Product (article) characteristics		
Vapour pressure	:	89.999998 Pa
Temperature	:	20 °C

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10.3. Exposure estimation and reference to its source

Release estimation method:

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

Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given 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.

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 measure.

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