

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

1.1. Product identifier

Trade name or designation of the mixture	ZELEC TY
Registration number	-
Synonyms	None.
Product code	1036EU
Issue date	18-July-2018
Version number	02
Revision date	25-June-2020
Supersedes date	09-February-2018

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

Identified uses	Industrial use Additives for fibers and plastics
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Address	STEPAN EUROPE Chemin Jongkind CS 20127 38341 Voreppe Cedex France
Telephone	(33) 4 76 50 51 00
Fax	(33) 4 76 50 51 35
E-mail	sds.contact@stepaneurope.com
Contact person	See email address

1.4. Emergency telephone number

General in EU	112 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Austria VIZ Poison Control Centre	+43 1 406 43 43 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Belgium Centre Antipoisons / Antigif centrum	070 245 245 (24h/24)
Bulgaria Emergency Medicine N.I.Pirogov"	+359 2 9154 233 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Croatia Poison Control Centre	(+385 1) 23-48-342 (24h/24)
Cyprus Poison Control Emergency	1401 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Czech Republic Toxikologické informacní středisko	+420 224 919 293, or +420 224 915 402 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Denmark Giftlinjen	82 12 12 12 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Estonia Poison information	16662 (Monday 9:00AM to Saturday 9:00AM (closed on Sundays and on national holidays). SDS/Product information may not be available for the Emergency Service.)
Finland Myrkytystietokeskus	09 471 977 (24h/day)
France National Poison Information Center	Hôpital F.WIDAL : 01 40 05 48 48 , ORFILA (INRS) : 01 45 42 59 59 (24h/24 7j/7)

1.4. Emergency telephone number

Germany Giftnotruf der Charité (Berlin)	030/19240 (Notruf)
Greece Poison Information Centre telephone number	(0030) 2107793777 24 hours/day
Hungary Információs szolgálat akut mérgezés esetén	(+36-80) 201-199 (0-24 h, díjmentesen hívható)
Ireland Poisons Information Centre, Beaumont Hospital	01 8092566 or 01 8379964
Italy Ospedale Niguarda Ca'Granda	02 661 010 29
Latvia Valsts ugunsdzēsības un glābšanas dienests	+371 67042473 (24h/24)
Lithuania Neatidėliotina informacija apsinuodijus	+370 5 236 20 52 or +37068753378 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Luxembourg Centre Antipoisons / Antigif centrum	070 245 245 24h/24
Malta Accident and Emergency Department	2545 4030 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Netherlands National Poisons Information Centre	030-2748888 Only for the purpose of informing medical personnel in cases of acute intoxications / Uitsluitend bestemd om professionele hulpverleners te informeren bij acute vergiftigingen
Norway Norwegian Poison Information Center	22 59 13 00 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Poland Poisons information Centre	(00 48)(58) 47 82 22, (00 48)(58) 31 65 16
Portugal CIAV - Centro de Informação Antivenenos	808 250 143
Romania Biroul RSI si Informare Toxicologica	021.318.36.06 (Available 8:00AM-3:00PM. SDS/Product information may not be available for the Emergency Service.)
Russia Toxicology Information and Advisory Center	(0 07)(95) 9 28 16 47
Slovakia National Toxicological Information Center	+421 2 5477 4166
Slovenia Urad Republike Slovenije za kemikalije	++ 386 1 400 60 51 (mon-fri 9.00-17.00)
Spain Servicio de Información Toxicológica	+ 34 91 562 04 20 24h/365 días
Sweden Giftinformationscentralen / Swedish Poisons Information Centre	010-456 6700 (mon-fri 9.00-17.00)
Switzerland Swiss Tox Info / Tox Info Suisse	145 (24h/24)
Turkey National Poison Control Center and Toxicology Department	(00 90)(312) 4 33 70 01 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
United Kingdom Guy's Hospital Poisons Unit	(00 44)(1 71) 6 35 91 91

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Health hazards

Skin corrosion/irritation

Category 2

H315 - Causes skin irritation.

Serious eye damage/eye irritation

Category 2

H319 - Causes serious eye irritation.

Hazard summary

Causes skin irritation. Causes serious eye irritation.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains:

Phosphoric acid, mono and bis-linear butyl esters, potassium salts

Hazard pictograms



Signal word

Warning

Hazard statements

H315

Causes skin irritation.

H319

Causes serious eye irritation.

Precautionary statements

Prevention

P280

Wear protective gloves/protective clothing/eye protection/face protection.

Response

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P332 + P313

If skin irritation occurs: Get medical advice/attention.

P302 + P352

IF ON SKIN: Wash with plenty of soap and water.

Storage

Disposal

Supplemental label information

None.

2.3. Other hazards

This mixture does not contain substances that are assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Phosphoric acid, mono and bis-linear butyl esters, potassium salts	50 - < 60	Not assigned 947-719-4	01-2120768609-37-0000	-	
Classification:	Skin Irrit. 2;H315, Eye Irrit. 2;H319				

SECTION 4: First aid measures

General information

In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

4.1. Description of first aid measures

Inhalation

Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact

Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion

Rinse mouth. Get medical attention if symptoms occur.

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

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

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

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards

No unusual fire or explosion hazards noted.

5.1. Extinguishing media	
Suitable extinguishing media	Carbon dioxide (CO ₂). Dry chemical powder. Water fog. Large Fires: Alcohol-resistant foam
Unsuitable extinguishing media	Do not use water jet.
5.2. Special hazards arising from the substance or mixture	During fire, gases hazardous to health may be formed. Fire may produce irritating, corrosive and/or toxic gases. In the event of fire the following can be released: Carbon oxides (CO _x)
5.3. Advice for firefighters	
Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special fire fighting procedures	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures	
For non-emergency personnel	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
For emergency responders	Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.
6.2. Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
6.3. Methods and material for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
6.4. Reference to other sections	For personal protection, see section 8 of the SDS. For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling	Do not get this material in contact with eyes. Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
7.2. Conditions for safe storage, including any incompatibilities	Store away from incompatible materials (see Section 10 of the SDS). Store in tightly closed original container in a dry, cool and well-ventilated place.
7.3. Specific end use(s)	Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters	
Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Recommended monitoring procedures	Follow standard monitoring procedures.
Derived no effect levels (DNELs)	

General Population

Components	Value	Assessment factor	Notes
Phosphoric acid, mono and bis-linear butyl esters, potassium salts (CAS Not assigned)			
Long-term, Systemic, Dermal	0.375 mg/kg bw/day		
Long-term, Systemic, Inhalation	1.31 mg/m ³		
Long-term, Systemic, Oral	0.417 mg/kg bw/day		

Workers

Components	Value	Assessment factor	Notes
Phosphoric acid, mono and bis-linear butyl esters, potassium salts (CAS Not assigned)			
Long-term, Systemic, Dermal	1.05 mg/kg bw/day		
Long-term, Systemic, Inhalation	7.4 mg/m ³		

Predicted no effect concentrations (PNECs)

Components	Value	Assessment factor	Notes
Phosphoric acid, mono and bis-linear butyl esters, potassium salts (CAS Not assigned)			
Freshwater	0.1 mg/l		
Marine water	10 µg/l		
Secondary poisoning	16.67 mg/kg		
Sediment (freshwater)	2.34 mg/kg		
Sediment (marine water)	0.234 mg/kg		
Soil	0.41 mg/kg		
STP	100 mg/l		

8.2. Exposure controls

Appropriate engineering controls Eye wash facilities and emergency shower must be available when handling this product. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection Wear safety glasses with side shields (or goggles) and a face shield. Face shield is recommended.

Skin protection

- Hand protection Wear appropriate chemical resistant gloves. PVC gloves are recommended.

- Other Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

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

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

Hygiene measures Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Environmental exposure controls Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state Liquid.
Form Liquid.
Colour Amber, Light yellow.

Odour Alcoholic.

Odour threshold Not available.

pH Not available.

Melting point/freezing point Not available.

Initial boiling point and boiling range > 100 °C (> 212 °F)

Flash point > 94.0 °C (> 201.2 °F)

Evaporation rate Not available.

Flammability (solid, gas) Not applicable.

Vapour pressure Not available.

Vapour density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Partially soluble.

Auto-ignition temperature Not available.

Decomposition temperature	Not available.
Viscosity	Not available.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
9.2. Other information	
Density	1.18 - 1.20 g/cm ³ @20°C
pH in aqueous solution	6.7 - 7.3 @100 g/l (25°C)

SECTION 10: Stability and reactivity

10.1. Reactivity	Not available.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials. To avoid thermal decomposition, do not overheat.
10.5. Incompatible materials	Avoid contact with acids and oxidising substances. Alkalies.
10.6. Hazardous decomposition products	At thermal decomposition temperatures, carbon monoxide and carbon dioxide. Oxides of phosphorus (PxOy)

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation	No adverse effects due to inhalation are expected.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Causes serious eye irritation. Skin irritation. May cause redness and pain.

11.1. Information on toxicological effects

Acute toxicity

Components	Species	Test Results
Phosphoric acid, mono and bis-linear butyl esters, potassium salts		
<u>Acute</u>		
Dermal		
LD50	Rat	> 2000 mg/kg
Oral		
LD50	Rat	> 2000 mg/kg
<u>Subacute</u>		
Oral		
NOAEL	Rat	250 mg/kg bw/day

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

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

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.

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

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

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

Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure Based on available data, the classification criteria are not met.

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

Mixture versus substance information No information available.

Other information Not available.

SECTION 12: Ecological information

12.1. Toxicity Based on available data, the classification criteria are not met for hazardous to the aquatic environment.

Components		Species	Test Results
Phosphoric acid, mono and bis-linear butyl esters, potassium salts			
Aquatic			
Acute			
Algae	EC50	Algae	100 mg/l
Crustacea	EC50	Crustacea	100 mg/l
Fish	LC50	Fish	1300 mg/l

12.2. Persistence and degradability The product is not readily biodegradable.

12.3. Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient n-octanol/water (log Kow) Phosphoric acid, mono and bis-linear butyl esters, potassium salts : Log Kow = -1.204 (22.2°C)

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil No data available.

12.5. Results of PBT and vPvB assessment This mixture does not contain substances that are assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.

12.6. Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. - 14.6.: Not regulated as dangerous goods.

RID

14.1. - 14.6.: Not regulated as dangerous goods.

IATA

14.1. - 14.6.: Not regulated as dangerous goods.

IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

Segregation group : None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended
Not listed.

Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Not listed.

Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended. The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended.

National regulations

Follow national regulation for work with chemical agents.

Follow national regulation on the protection of workers from the risks of exposure to carcinogens and mutagens at work, in accordance with Directive 2004/37/EC.

15.2. Chemical safety assessment

Chemical Safety Assessment has been carried out. (EC 947-719-4).
No Chemical Safety Assessment has been carried out (mixture).

SECTION 16: Other information

List of abbreviations

REACH: Registration, Evaluation and Authorization of Chemicals (REGULATION (EC) No 1907/2006)

CLP: Classification, Labeling and Packaging REGULATION (EC) No 1272/2008

CAS: Chemical Abstract Service

EINECS: European Inventory of Existing Commercial Chemical Substances

PBT: Persistent, bioaccumulative, toxic

vPvB: very Persistent, very Bioaccumulative

BLV: Biological Limit Value

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

LC50: Lethal Concentration 50%

IC50: Inhibition Concentration 50%

ES: Exposure scenario

CSR: Chemical Safety Report

DNEL: Derived No Effect Level

PNEC: Predicted No Effect Concentration

ADR: European agreement concerning the international carriage of dangerous goods by road

RID: Regulations concerning the international carriage of dangerous goods by rail

IMDG Code: International Maritime Dangerous Goods Code

IATA: International Air Transport Association

References

Not available.

Information on evaluation method leading to the classification of mixture

Not applicable.

**Full text of any H-statements
not written out in full under
Sections 2 to 15**

H315 Causes skin irritation.
H319 Causes serious eye irritation.

Revision information

Product and Company Identification: Product and Company Identification
SECTION 2: Hazards identification: Classification of the substance or mixture
SECTION 2: Hazards identification: Disposal
SECTION 2: Hazards identification: Response
SECTION 2: Hazards identification: Storage
SECTION 2: Hazards identification: 2.3. Other hazards
SECTION 2: Hazards identification: Supplemental label information
Composition / Information on Ingredients: Ingredients
SECTION 8: Exposure controls/personal protection: Appropriate engineering controls
SECTION 11: Toxicological information: Acute toxicity
SECTION 12: Ecological information: 12.5. Results of PBT and vPvB assessment
SECTION 12: Ecological information: Partition coefficient n-octanol/water (log Kow)
GHS: Classification
REACH: Associated Exposure Scenarios

Training information

Follow training instructions when handling this material.

Disclaimer

Stepan Europe cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use.

Annex to the extended Safety Data Sheet (eSDS)

Table of contents

ES1 Formulation or re-packing; Non-metal surface treatment products (PC15); Formulation into mixture	11
ES2 Use at industrial sites; Non-metal surface treatment products (PC15); Various sectors; Use at industrial site leading to inclusion into/onto article	17
ES3 Service life - consumers; Various articles; Widespread use of articles with low release (indoor)	23

1. ES 1: Formulation or re-packing; Non-metal surface treatment products (PC15); Formulation into mixture

1.1. Title section

ES Name: Formulation into mixture

Product Category: Non-metal surface treatment products (PC15)

Environment

1: Formulation into mixture	ERC2
-----------------------------	------

Worker

2: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
3: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
4: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3
5: Chemical production where opportunity for exposure arises	PROC4
6: Mixing or blending in batch processes	PROC5
7: Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
8: Use as laboratory reagent	PROC15
9: Manual maintenance (cleaning and repair) of machinery	PROC28

1.2. Conditions of use affecting exposure

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

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

Daily amount per site <= 0.99 tonnes/day

Annual amount per site <= 9.9 tonnes/year

Emission days: 10 days per year

Intermittent release

Conditions and measures related to sewage treatment plant

Municipal sewage treatment plant is assumed. Waste - minimum efficiency of >= 2.414 %

STP effluent: 2000 m3/day

Other conditions affecting environmental exposure

Receiving surface water flow >= 18000 m3/day

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)

Product (article) characteristics

0 Pa

Covers concentrations up to 50 %

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

Duration: Covers use up to <= 8 h/day

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

0 Pa

Covers concentrations up to 50 %

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

Duration: Covers use up to <= 1 h/day

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

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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) characteristics**

0 Pa

Covers concentrations up to 50 %

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

Duration: Covers use up to <= 1 h/day

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

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

1.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)**Product (article) characteristics**

0 Pa

Covers concentrations up to 50 %

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

Duration: Covers use up to <= 1 h/day

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

Wear suitable respiratory protection.; For further specification, refer to section 8 of the SDS. Inhalation - minimum efficiency of 90 %

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

1.2.6. Control of worker exposure: Mixing or blending in batch processes (PROC5)**Product (article) characteristics**

0 Pa

Covers concentrations up to 50 %

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

Duration: Covers use up to <= 1 h/day

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

Wear suitable respiratory protection.; For further specification, refer to section 8 of the SDS. Inhalation - minimum efficiency of 90 %

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

Product (article) characteristics

0 Pa

Covers concentrations up to 50 %

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

Duration: Covers use up to <= 1 h/day

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

Wear suitable respiratory protection.; For further specification, refer to section 8 of the SDS. Inhalation - minimum efficiency of 90 %

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

Product (article) characteristics

0 Pa

Covers concentrations up to 50 %

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

Duration: Covers use up to <= 1 h/day

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

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 20°C

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

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

Product (article) characteristics

Covers concentrations up to 50 %

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

Duration: Covers use up to <= 1 h/day

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

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

Wear suitable respiratory protection.; For further specification, refer to section 8 of the SDS. Inhalation - minimum efficiency of 90 %

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 20°C

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

1.3. Exposure estimation and reference to its source

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

Release rate	Release rate	Release estimation method	
Water	0.99 kg/day	Estimated release factor	
Air	0 kg/day	Estimated release factor	
Soil	0 kg/day	Estimated release factor	
Protection target	Exposure estimate	Method	RCR
Man via environment - Oral	= 2.77619E-3 mg/kg bw/day	EUSES v2.1	= 6.65753E-3
Soil	= 2.86523E-1 mg/kg dry weight	EUSES v2.1	= 6.98837E-1
Freshwater sediment	= 1.13054E0 mg/kg dry weight	EUSES v2.1	= 4.83137E-1
Freshwater	= 4.82916E-2 mg/L	EUSES v2.1	= 4.82916E-1
Air	= 0 mg/m ³	EUSES v2.1	
Marine water	= 4.82916E-3 mg/L	EUSES v2.1	= 4.82916E-1
Man via environment - Inhalation	= 0 mg/m ³	EUSES v2.1	= 0
Sewage treatment plant	= 4.83048E-1 mg/L	EUSES v2.1	= 4.83048E-3
Marine sediment	= 1.13054E-1 mg/kg dry weight	EUSES v2.1	= 4.83137E-1

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, systemic, long-term	= 0.007 mg/m ³	ECETOC TRA worker v3	= 9.45946E-4
inhalative, local, short-term	= 0.028 mg/m ³	ECETOC TRA worker v3	
inhalative, local, long-term	= 0.007 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, short-term	= 0.028 mg/m ³	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.034 mg/kg bw/day	ECETOC TRA worker v3	= 3.2381E-2

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, local, long-term	= 0.14 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.14 mg/m ³	ECETOC TRA worker v3	= 1.89189E-2
inhalative, systemic, short-term	= 2.8 mg/m ³	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.137 mg/kg bw/day	ECETOC TRA worker v3	= 1.30476E-1
inhalative, local, short-term	= 2.8 mg/m ³	ECETOC TRA worker v3	

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)

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, local, long-term	= 0.14 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, short-term	= 2.8 mg/m ³	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.069 mg/kg bw/day	ECETOC TRA worker v3	= 6.57143E-2
inhalative, systemic, long-term	= 0.14 mg/m ³	ECETOC TRA worker v3	= 1.89189E-2
inhalative, local, short-term	= 2.8 mg/m ³	ECETOC TRA worker v3	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, systemic, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	= 4.72973E-2
inhalative, systemic, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.343 mg/kg bw/day	ECETOC TRA worker v3	= 3.26667E-1
inhalative, local, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
inhalative, local, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, systemic, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	= 4.72973E-2
inhalative, local, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
inhalative, local, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.6855 mg/kg bw/day	ECETOC TRA worker v3	= 6.52857E-1

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, local, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	= 4.72973E-2
inhalative, systemic, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.6855 mg/kg bw/day	ECETOC TRA worker v3	= 6.52857E-1
inhalative, local, short-term	= 7 mg/m ³	ECETOC TRA worker v3	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, local, long-term	= 0.7 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, short-term	= 14 mg/m ³	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.034 mg/kg bw/day	ECETOC TRA worker v3	= 3.2381E-2

inhalative, systemic, long-term	= 0.7 mg/m ³	ECETOC TRA worker v3	= 9.45946E-2
inhalative, local, short-term	= 14 mg/m ³	ECETOC TRA worker v3	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, systemic, long-term	= 0.7 mg/m ³	ECETOC TRA worker v2.0	= 9.45946E-2
dermal, systemic, long-term	= 0.686 mg/kg bw/day	ECETOC TRA worker v2.0	= 6.53333E-1
inhalative, local, long-term	= 0.7 mg/m ³	ECETOC TRA worker v2.0	

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

2. ES 2: Use at industrial sites; Non-metal surface treatment products (PC15); Various sectors; Use at industrial site leading to inclusion into/onto article

2.1. Title section

ES Name: Use at industrial site leading to inclusion into/onto article

Product Category: Non-metal surface treatment products (PC15)

Sector(s) of use: Manufacture of textiles, leather, fur; Manufacture of plastics products, including compounding and conversion; Manufacture of furniture

Environment

1: Use at industrial site leading to inclusion into/onto article	ERC5
--	------

Worker

2: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC1
3: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions	PROC2
4: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition	PROC3
5: Chemical production where opportunity for exposure arises	PROC4
6: Mixing or blending in batch processes	PROC5
7: Industrial spraying	PROC7
8: Transfer of substance or mixture (charging/discharging) at dedicated facilities	PROC8b
9: Roller application or brushing	PROC10
10: Treatment of articles by dipping and pouring	PROC13

2.2. Conditions of use affecting exposure

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

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

Daily amount per site ≤ 0.495 tonnes/day

Annual amount per site ≤ 9.9 tonnes/year

Emission days: 20 days per year

Intermittent release

Conditions and measures related to sewage treatment plant

Municipal sewage treatment plant is assumed. Waste - minimum efficiency of ≥ 2.414 %

STP effluent: 2000 m³/day

Other conditions affecting environmental exposure

Receiving surface water flow ≥ 18000 m³/day

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

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to ≤ 8 h/day

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to $= 40^{\circ}\text{C}$

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

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

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to <= 1 h/day

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to <= 1 h/day

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

Product (article) characteristics

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to <= 1 h/day

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

Product (article) characteristics

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to <= 1 h/day

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

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

Product (article) characteristics

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to <= 8 h/day

Technical and organisational conditions and measures

Local exhaust ventilation Inhalation - minimum efficiency of 95 %

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

Product (article) characteristics

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to <= 1 h/day

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

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

Product (article) characteristics

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to <= 8 h/day

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

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

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

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

Product (article) characteristics

0 Pa

Covers concentrations up to 1 %

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

Duration: Covers use up to <= 8 h/day

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

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

Use suitable eye protection.

Other conditions affecting workers exposure

Indoor use

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

Assumes process temperature up to = 40°C

Provide a basic standard of general ventilation (1 to 3 air changes per hour). 3 ach (air changes per hour)

2.3. Exposure estimation and reference to its source

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

Release rate	Release rate	Release estimation method
Water	0.495 kg/day	Estimated release factor
Air	0 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Exposure estimate	Method	RCR
Marine water	= 2.41464E-3 mg/L	EUSES v2.1	= 2.41464E-1
Man via environment - Inhalation	= 0 mg/m ³	EUSES v2.1	= 0
Sewage treatment plant	= 2.41524E-1 mg/L	EUSES v2.1	= 2.41524E-3
Marine sediment	= 5.65284E-2 mg/kg dry weight	EUSES v2.1	= 2.41574E-1
Soil	= 1.43262E-1 mg/kg dry weight	EUSES v2.1	= 3.4942E-1
Freshwater sediment	= 5.65284E-1 mg/kg dry weight	EUSES v2.1	= 2.41574E-1
Man via environment - Oral	= 1.38964E-3 mg/kg bw/day	EUSES v2.1	= 3.33247E-3
Freshwater	= 2.41464E-2 mg/L	EUSES v2.1	= 2.41464E-1
Air	= 0 mg/m ³	EUSES v2.1	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, local, long-term	= 0.0007 mg/m ³	ECETOC TRA worker v3	
inhalative, local, short-term	= 0.0028 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.0007 mg/m ³	ECETOC TRA worker v3	= 9.45946E-5
dermal, systemic, long-term	= 0.0034 mg/kg bw/day	ECETOC TRA worker v3	= 3.2381E-3
inhalative, systemic, short-term	= 0.0028 mg/m ³	ECETOC TRA worker v3	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
dermal, systemic, long-term	= 0.137 mg/kg bw/day	ECETOC TRA worker v3	= 1.30476E-1
inhalative, local, long-term	= 0.014 mg/m ³	ECETOC TRA worker v3	

inhalative, local, short-term	= 0.28 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.014 mg/m ³	ECETOC TRA worker v3	= 1.89189E-3
inhalative, systemic, short-term	= 0.28 mg/m ³	ECETOC TRA worker v3	

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)

Route of exposure and type of effects	Exposure Estimation	Method	RCR
dermal, systemic, long-term	= 0.069 mg/kg bw/day	ECETOC TRA worker v3	= 6.57143E-2
inhalative, systemic, short-term	= 0.28 mg/m ³	ECETOC TRA worker v3	
inhalative, local, long-term	= 0.014 mg/m ³	ECETOC TRA worker v3	
inhalative, local, short-term	= 0.28 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.014 mg/m ³	ECETOC TRA worker v3	= 1.89189E-3

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, local, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	= 4.72973E-2
inhalative, systemic, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.686 mg/kg bw/day	ECETOC TRA worker v3	= 6.53333E-1
inhalative, local, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, local, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	
inhalative, local, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	= 4.72973E-2
dermal, systemic, long-term	= 0.1371 mg/kg bw/day	ECETOC TRA worker v3	= 1.30571E-1
inhalative, systemic, short-term	= 7 mg/m ³	ECETOC TRA worker v3	

2.3.7. Worker exposure: Industrial spraying (PROC7)

Route of exposure and type of effects	Exposure Estimation	Method	RCR
dermal, systemic, long-term	= 0.2143 mg/kg bw/day	ECETOC TRA worker v3	= 2.04095E-1
dermal, local, short-term	= 1.00007E-2 mg/cm ²	ECETOC TRA worker v3	
inhalative, local, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	
inhalative, local, short-term	= 1.4 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	= 4.72973E-2
inhalative, systemic, short-term	= 1.4 mg/m ³	ECETOC TRA worker v3	
dermal, local, long-term	= 1.00007E-2 mg/cm ²	ECETOC TRA worker v3	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
dermal, systemic, long-term	= 0.1371 mg/kg bw/day	ECETOC TRA worker v3	= 1.30571E-1
inhalative, systemic, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
inhalative, local, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	
inhalative, local, short-term	= 7 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.35 mg/m ³	ECETOC TRA worker v3	= 4.72973E-2

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, local, short-term	= 2.8 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.7 mg/m ³	ECETOC TRA worker v3	= 9.45946E-2
inhalative, systemic, short-term	= 2.8 mg/m ³	ECETOC TRA worker v3	
dermal, local, long-term	= 2.0001E-2 mg/cm ²	ECETOC TRA worker v3	
dermal, systemic, long-term	= 0.2743 mg/kg bw/day	ECETOC TRA worker v3	= 2.61238E-1
dermal, local, short-term	= 2.0001E-2 mg/cm ²	ECETOC TRA worker v3	
inhalative, local, long-term	= 0.7 mg/m ³	ECETOC TRA worker v3	

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

Route of exposure and type of effects	Exposure Estimation	Method	RCR
dermal, local, long-term	= 1.99938E-2 mg/cm ²	ECETOC TRA worker v3	
dermal, local, short-term	= 1.99938E-2 mg/cm ²	ECETOC TRA worker v3	
inhalative, local, long-term	= 0.5 mg/m ³	ECETOC TRA worker v3	
inhalative, local, short-term	= 2 mg/m ³	ECETOC TRA worker v3	
inhalative, systemic, long-term	= 0.5 mg/m ³	ECETOC TRA worker v3	= 6.75676E-2
dermal, systemic, long-term	= 0.1371 mg/kg bw/day	ECETOC TRA worker v3	= 1.30571E-1
inhalative, systemic, short-term	= 2 mg/m ³	ECETOC TRA worker v3	

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

3. ES 3: Service life - consumers; Various articles; Widespread use of articles with low release (indoor)

3.1. Title section

ES Name: Widespread use of articles with low release (indoor)

Article Categories: Fabrics, textiles and apparel: Furniture & furnishings, including furniture coverings; Fabrics, textiles and apparel: Articles with intense direct dermal contact during normal use: bedding and mattresses

Environment

1: Widespread use of articles with low release (indoor) ERC11a

Consumer

2: Fabrics, textiles and apparel: Furniture & furnishings, including furniture coverings

3: Fabrics, textiles and apparel: Articles with intense direct dermal contact during normal use: bedding and mattresses

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Widespread use of articles with low release (indoor) (ERC11a)

Other conditions affecting environmental exposure

Municipal sewage treatment plant is assumed. Water - minimum efficiency of $\geq 2.414\%$

3.2.2. Control of consumer exposure: Fabrics, textiles and apparel: Furniture & furnishings, including furniture coverings

Product (article) characteristics

Covers concentrations up to 0.25%

Oral exposure is considered to be not relevant.

Inhalation exposure is considered to be not relevant.

Other conditions affecting consumers exposure

Covers skin contact area up to $\leq 3000\text{ cm}^2$

3.2.3. Control of consumer exposure: Fabrics, textiles and apparel: Articles with intense direct dermal contact during normal use: bedding and mattresses

Product (article) characteristics

Covers concentrations up to 0.05%

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

For each use event, covers use amounts up to $\leq 25000\text{ g/event}$

Duration: Exposure duration = 8 h/event ; Frequency: Covers use up to = 1 events per day

Other conditions affecting consumers exposure

Assumes that potential dermal contact excludes feet, hands and head.

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Widespread use of articles with low release (indoor) (ERC11a)

Release rate	Release rate	Release estimation method
Water	0.00003 kg/day	Environmental Release Category (ERC)
Air	0.00003 kg/day	Environmental Release Category (ERC)
Soil	0 kg/day	Environmental Release Category (ERC)

Protection target	Exposure estimate	Method	RCR
Marine water	$= 2.45955\text{E-}7\text{ mg/L}$	EUSES v2.1	$= 2.45955\text{E-}5$
Sewage treatment plant	$= 1.32838\text{E-}5\text{ mg/L}$	EUSES v2.1	$= 1.32838\text{E-}7$
Marine sediment	$= 5.75798\text{E-}6\text{ mg/kg dry weight}$	EUSES v2.1	$= 2.46067\text{E-}5$
Man via environment - Inhalation	$= 0\text{ mg/m}^3$	EUSES v2.1	$= 0$
Freshwater sediment	$= 5.79633\text{E-}5\text{ mg/kg dry weight}$	EUSES v2.1	$= 2.47706\text{E-}5$
Man via environment - Oral	$= 1.03638\text{E-}7\text{ mg/kg bw/day}$	EUSES v2.1	$= 2.48532\text{E-}7$
Soil	$= 9.31198\text{E-}6\text{ mg/kg dry weight}$	EUSES v2.1	$= 2.27121\text{E-}5$
Freshwater	$= 2.47593\text{E-}6\text{ mg/L}$	EUSES v2.1	$= 2.47593\text{E-}5$
Air	$= 0\text{ mg/m}^3$	EUSES v2.1	

3.3.2. Consumer exposure: Fabrics, textiles and apparel: Furniture & furnishings, including furniture coverings

Route of exposure and type of effects	Exposure Estimation	Method	RCR
dermal, systemic, long-term	= 0.065 mg/kg bw/day	Consexpo v4.1	= 1.73333E-1
inhalative, systemic, long-term	= 0 mg/m ³	Consexpo v4.1	= 0
oral, systemic, long-term	= 0 mg/kg bw/day	Consexpo v4.1	= 0
inhalative, local, long-term	= 0 mg/m ³	Consexpo v4.1	

3.3.3. Consumer exposure: Fabrics, textiles and apparel: Articles with intense direct dermal contact during normal use: bedding and mattresses

Route of exposure and type of effects	Exposure Estimation	Method	RCR
inhalative, systemic, long-term	= 1.31611E-4 mg/m ³	ECETOC TRA consumer v3	= 1.00466E-4
oral, systemic, long-term	= 0.0005 mg/kg bw/day	ECETOC TRA consumer v3	= 1.19904E-3
inhalative, local, long-term	= 1.31611E-4 mg/m ³	ECETOC TRA consumer v3	
dermal, systemic, long-term	= 1.6968E-1 mg/kg bw/day	ECETOC TRA consumer v3	= 4.5248E-1

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