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

1.1 Product identifier

Trade name	:	DISPERBYK-109
Product code	:	000000000000107046
REACH Registration Number	:	01-2119979563-23-0000
Substance name	:	Condensation products of tall-oil fatty acids with 2-[(2-aminoethyl)amino]ethanol
EC-No.	:	272-902-4

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

Use of the Substance/Mixture	:	Wetting & Dispersing Additive
Recommended restrictions on use	:	This product is not intended for consumer use.

1.3 Details of the supplier of the safety data sheet

Company	:	BYK-Chemie GmbH Abelstrasse 45 46483 Wesel
Telephone	:	+49 281 670-0
Telefax	:	+49 281 65735
Information	:	Regulatory Affairs
Telephone	:	+49 281 670-23532
Telefax	:	+49 281 670-23533
E-mail address	:	GHS.BYK@altana.com

1.4 Emergency telephone number

+44 1235 239670

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2	H315: Causes skin irritation.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Specific target organ toxicity - repeated exposure, Category 2, Gastrointestinal	H373: May cause damage to organs through prolonged or repeated exposure if swallowed.

tract, Stomach

Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements :
H315 Causes skin irritation.
H318 Causes serious eye damage.
H373 May cause damage to organs (Gastrointestinal tract, Stomach) through prolonged or repeated exposure if swallowed.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:

P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P391 Collect spillage.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name : Condensation products of tall-oil fatty acids with 2-[(2-aminoethyl)amino]ethanol

EC-No. : 272-902-4

Chemical nature : High molecular weight Alkylolamino amide

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)	M-Factor, SCL, ATE
Condensation products of tall-oil fatty acids with 2-[(2-aminoethyl)amino]ethanol	68919-76-6 272-902-4	>= 50 - <= 100	M-Factor (Acute aquatic toxicity): 10 M-Factor (Chronic aquatic toxicity): 1

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	:	No information available.
Risks	:	No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment	:	No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	:	Foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	:	Nitrogen oxides (NOx) Carbon oxides

5.3 Advice for firefighters

Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment.

6.2 Environmental precautions

Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal considerations see section 13., For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Do not breathe vapours/dust.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : When using do not eat or drink. When using do not smoke.
Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Electrical installations / working materials must comply with the technological safety standards.

Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s) : No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
Fatty acids, tall-oil, reaction products with 2-[(2-	Workers	Inhalation	Systemic effects, Long-term exposure	0,5288 mg/m3

ami-noethyl)amino]ethanol				
	Workers	Skin contact	Systemic effects, Long-term exposure	0,15 mg/kg
	Consumers	Inhalation	Systemic effects, Long-term exposure	0,13 mg/m3
	Consumers	Skin contact	Systemic effects, Long-term exposure	0,0075 mg/kg
	Consumers	Ingestion	Systemic effects, Long-term exposure	0,075 mg/kg

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol	Fresh water	0,00003 mg/l
	Marine water	0,000003 mg/l
	Intermittent releases	0,0003 mg/l
	Sewage treatment plant	2,67 mg/l
	Fresh water sediment	0,367 mg/kg
	Marine sediment	0,0376 mg/kg
	Soil	3,7 mg/kg

8.2 Exposure controls

Personal protective equipment

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Hand protection
Material : Protective gloves complying with EN 374.

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Environmental exposure controls

General advice : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : liquid

Colour : yellow - brown

Odour	:	amine-like
Odour Threshold	:	No data available
Pour point	:	< -21 °C (1.013 hPa) Method: OECD Test Guideline 102 GLP: yes
Boiling point/boiling range	:	> 400 °C (1.013 hPa) Method: OECD Test Guideline 103 GLP: yes
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	> 100,00 °C Method: 49 (Pensky-Martens)
Auto-ignition temperature	:	> 200 °C Method: DIN 51794
Decomposition temperature	:	No data available
pH	:	9 (20 °C) Concentration: 1 % Method: Universal pH-value indicator
Viscosity		
Viscosity, dynamic	:	No data available
Solubility(ies)		
Water solubility	:	0,0102 g/l (20 °C, 1.013 hPa) Method: OECD Test Guideline 105 GLP: yes
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Vapour pressure	:	0,0000107 Pa (25,00 °C) Method: OECD Test Guideline 104 GLP: yes
Relative density	:	No data available
Density	:	0,939 g/cm3 (20 °C, 1.013 hPa) Method: 4 (20°C oscillating U-tube) GLP: yes

Bulk density	:	Not applicable
Relative vapour density	:	No data available

9.2 Other information

Flammability (liquids)	:	Sustains combustion
Evaporation rate	:	No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid	:	No data available

10.5 Incompatible materials

Materials to avoid	:	Acids Strong oxidizing agents

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

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

Acute toxicity

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Acute oral toxicity	:	LD50 Oral (Rat, female): 2.500 mg/kg Method: OECD Test Guideline 423 GLP: yes
Acute dermal toxicity	:	LD50 Dermal (Rat, male and female): > 2.000 mg/kg Method: OECD Test Guideline 402 GLP: yes

Skin corrosion/irritation

Product:

Remarks	:	May irritate skin. May cause skin irritation in susceptible persons.

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Species	:	EPISKIN human epidermis skin constructs
Assessment	:	Irritating to skin.
Method	:	OECD Test Guideline 439
Result	:	Skin irritation
GLP	:	yes

Species	:	EPISKIN human epidermis skin constructs
Assessment	:	not corrosive
Method	:	OECD Test Guideline 431
Result	:	not corrosive
GLP	:	yes

Serious eye damage/eye irritation

Product:

Remarks	:	May cause irreversible eye damage.

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Species	:	Rabbit
Assessment	:	Risk of serious damage to eyes.
Method	:	OECD Test Guideline 405
Result	:	Risk of serious damage to eyes.
GLP	:	yes

Species	:	Bovine corneal opacity and permeability assay (BCOP)
Method	:	OECD Test Guideline 437
Result	:	No eye irritation
GLP	:	yes

Respiratory or skin sensitisation

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Test Type	:	Mouse Local Lymph Node assay (LLNA)
Species	:	Mouse
Method	:	OECD Test Guideline 429
Result	:	Does not cause skin sensitisation.
GLP	:	yes

Germ cell mutagenicity

Product:

Genotoxicity in vivo : Remarks: No data available

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Genotoxicity in vitro : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: In vitro mammalian cell gene mutation test (mouse lymphoma)

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Test Type: In Vitro Mammalian Cell Micronucleus Test (MNvit)
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative
GLP: yes

Carcinogenicity

Product:

Remarks : No data available

Reproductive toxicity

Product:

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

STOT - single exposure

Product:

Remarks : No data available

STOT - repeated exposure

Product:

Remarks : No data available

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Species	:	Rat, male and female
NOAEL	:	20 mg/kg
Application Route	:	Oral
Method	:	OECD Test Guideline 422
GLP	:	No information available.

Species	:	Rat, male and female
NOAEL	:	15 mg/kg
Application Route	:	Oral
Method	:	OECD Test Guideline 408
GLP	:	yes

Aspiration toxicity

Product:

No data available

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Toxicity to fish : LC50 (Brachydanio rerio (Zebrafisch)): 0,3 mg/l

Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203
GLP: No information available.

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0,37 mg/l Exposure time: 24 h Test Type: static test Method: OECD Test Guideline 202 GLP: No information available.
Toxicity to algae/aquatic plants	:	ErC50 (Desmodesmus subspicatus (green algae)): 0,03 mg/l Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201 GLP: No information available.
M-Factor (Acute aquatic toxicity)	:	10
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0,13 mg/l End point: Reproduction Exposure time: 21 d Species: Daphnia magna (Water flea) Method: OECD Test Guideline 211 GLP: yes
M-Factor (Chronic aquatic toxicity)	:	1
Toxicity to soil dwelling organisms	:	NOEC: > 1.000 mg/kg Exposure time: 8 Weeks End point: Reproduction Species: Eisenia fetida (earthworms) Method: OECD Test Guideline 222 GLP:yes

12.2 Persistence and degradability

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Biodegradability	:	Result: Not readily biodegradable. Method: OECD Test Guideline 301B GLP: yes

12.3 Bioaccumulative potential

Components:

Fatty acids, tall-oil, reaction products with 2-[(2-aminoethyl)amino]ethanol:

Partition coefficient: n-octanol/water	:	Remarks: Not applicable

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

14.1 UN number or ID number

ADR	:	UN 3082
RID	:	UN 3082
IMDG	:	UN 3082
IATA	:	UN 3082

14.2 UN proper shipping name

ADR	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Hydroxyalkylethenyl imidazoline)
RID	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Hydroxyalkylethenyl imidazoline)
IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Hydroxyalkylethenyl imidazoline)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (Hydroxyalkylethenyl imidazoline)

14.3 Transport hazard class(es)

ADR	:	9
RID	:	9
IMDG	:	9
IATA	:	9

14.4 Packing group

ADR

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9
Tunnel restriction code	:	-

RID

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Remarks	:	IMDG Code segregation group - none

IATA (Cargo)

Packing instruction (cargo aircraft)	:	964
Packing group	:	III
Labels	:	Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

14.5 Environmental hazards

ADR
Environmentally hazardous : yes

RID
Environmentally hazardous : no

IMDG
Marine pollutant : yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	:	This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).
Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	E1	ENVIRONMENTAL HAZARDS
Seveso III Directive (2012/18/EU) implemented by Control of Major Accident Hazards Regulations 2015 (COMAH)	E1	ENVIRONMENTAL HAZARDS

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Items where relevant changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration

associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

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.

GB / EN

Annex: Exposure Scenarios

Table of Contents

ES 1: Formulation or re-packing.

1.1. Title section

Exposure Scenario name	:	Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities.
Structured Short Title	:	Formulation or re-packing.

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

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	:	220 kg
Annual amount per site	:	50000 kg
Emission days	:	225

Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP effluent	:	2.000 m3/d
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18.000 m3/d

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		
Covers percentage substance in the product up to 100 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Technical and organisational conditions and measures		
Handle in a fume cupboard or under extract ventilation. Inhalation - minimum efficiency of 90 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Technical and organisational conditions and measures		
Handle in a fume cupboard or under extract ventilation. Inhalation - minimum efficiency of 90 %		

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor

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
Covers percentage substance in the product up to 100 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Use frequency : 8 hours/day
Technical and organisational conditions and measures
Handle in a fume cupboard or under extract ventilation. Inhalation - minimum efficiency of 90 %
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Use frequency : 3 hours/day
Technical and organisational conditions and measures
Handle in a fume cupboard or under extract ventilation. Inhalation - minimum efficiency of 90 %
Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor

1.2.6. 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 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Use frequency : 8 hours/day
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor

1.2.7. 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 %.
Amount used (or contained in articles), frequency and duration of use/exposure
Use frequency : 8 hours/day
Technical and organisational conditions and measures
Provide extract ventilation to material transfer points and other openings. Inhalation - minimum efficiency of 95 %
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor

1.2.8. 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 %.

Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

1.3. Exposure estimation and reference to its source

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

Release route	Release rate	Release estimation method
Water		EUSES
Air		EUSES
Soil		EUSES

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
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

1.3.8. 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
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

For scaling see
http://www.ecetoc.org/tra

ES 2: Use in coatings; Industrial uses (SU3).

2.1. Title section

Exposure Scenario name	:	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.
Structured Short Title	:	Use in coatings; Industrial uses (SU3).

Environment		
CS 1	**Use at industrial site leading to inclusion into/onto article**	ERC5
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	**Industrial spraying**	PROC7
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	**Roller application or brushing**	PROC10
CS 11	**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	:	180 kg
Annual amount per site	:	40000 kg
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP effluent	:	2.000 m3/d
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18.000 m3/d

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 product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics
Covers percentage substance in the product up to 1 %.

Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

2.2.9. 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 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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 route	Release rate	Release estimation method
Water		EUSES
Air		EUSES
Soil		EUSES

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
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

2.3.7. Worker exposure: Industrial spraying (PROC7)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

For scaling see
http://www.ecetoc.org/tra

ES 3: Use in coatings; Professional uses (SU22).

3.1. Title section

Exposure Scenario name	:	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and equipment cleaning, maintenance and associated laboratory activities.
Structured Short Title	:	Use in coatings; Professional uses (SU22).

Environment		
CS 1	**Widespread use leading to inclusion into/onto article (indoor)**	ERC8c
Worker		
CS 2	**Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions**	PROC2
CS 3	**Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition**	PROC3
CS 4	**Mixing or blending in batch processes**	PROC5
CS 5	**Transfer of substance or mixture (charging/discharging) at non dedicated-facilities**	PROC8a
CS 6	**Roller application or brushing**	PROC10
CS 7	**Non-industrial spraying**	PROC11
CS 8	**Manual activities involving hand contact**	PROC19

3.2. Conditions of use affecting exposure

3.2.1. 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		
Daily amount per site	:	82 kg
Annual amount per site	:	30000 kg
Conditions and measures related to sewage treatment plant		

STP type	:	Municipal Sewage Treatment Plant
STP effluent	:	2.000 m3/d
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18.000 m3/d

3.2.2. 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 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

3.2.3. 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 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		

Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

3.2.5. 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 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	3 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

3.2.8. Control of worker exposure: Manual activities involving hand contact (PROC19)

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	3 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor

3.3. Exposure estimation and reference to its source

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

Release route	Release rate	Release estimation method
Water		EUSES
Air		EUSES
Soil		EUSES

3.3.2. 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
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

3.3.3. 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
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	

dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

3.3.7. Worker exposure: Non-industrial spraying (PROC11)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

3.3.8. Worker exposure: Manual activities involving hand contact (PROC19)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	

dermal			(ECETOC TRA)	

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

For scaling see
http://www.ecetoc.org/tra

ES 4: Use in coatings; Professional uses (SU22).

4.1. Title section

Exposure Scenario name	:	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and equipment cleaning, maintenance and associated laboratory activities.
Structured Short Title	:	Use in coatings; Professional uses (SU22).

Environment		
CS 1	**Widespread use leading to inclusion into/onto article (outdoor)**	ERC8f
Worker		
CS 2	**Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition**	PROC3
CS 3	**Mixing or blending in batch processes**	PROC5
CS 4	**Transfer of substance or mixture (charging/discharging) at non dedicated-facilities**	PROC8a
CS 5	**Roller application or brushing**	PROC10
CS 6	**Non-industrial spraying**	PROC11

4.2. Conditions of use affecting exposure

4.2.1. 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		
Daily amount per site	:	82 kg
Annual amount per site	:	30000 kg
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP effluent	:	2.000 m3/d
Other conditions affecting environmental exposure		

Receiving surface water flow	:	18.000 m3/d

4.2.2. 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 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	3 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor

4.2.4. 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 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	8 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor

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

Product (article) characteristics		
Covers percentage substance in the product up to 1 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Use frequency	:	3 hours/day
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Outdoor

4.3. Exposure estimation and reference to its source

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

Release route	Release rate	Release estimation method
Water		EUSES
Air		EUSES
Soil		EUSES

4.3.2. 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
oral			(ECETOC TRA)	

inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

4.3.6. Worker exposure: Non-industrial spraying (PROC11)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
oral			(ECETOC TRA)	
inhalative			(ECETOC TRA)	
dermal			(ECETOC TRA)	

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

For scaling see
http://www.ecetoc.org/tra