



SAFETY DATA SHEET (1907/2006)

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Escalol 577

ANNEX

EXPOSURE SCENARIO 1: FORMULATION OR RE-PACKING - FORMULATION OF COSMETIC PRODUCTS

Product category formulated: PC 39: Cosmetics, personal care products

Environment contributing scenario(s):			SPERC
CS 1	Formulation of cosmetic products (high viscosity liquids)	ERC 2	Cosmetics Europe 2.1f.v2
CS 2	Formulation of cosmetic products (non-liquid creams)	ERC 2	Cosmetics Europe 2.1h.v2
Worker contributing scenario(s):			SWED
CS 3	Formulation of cosmetic products	PROC 1	
CS 4	Formulation of cosmetic products	PROC 2	
CS 5	Formulation of cosmetic products	PROC 3	
CS 6	Formulation of cosmetic products	PROC 5	
CS 7	Formulation of cosmetic products	PROC 8a	
CS 8	Formulation of cosmetic products	PROC 8b	
CS 9	Formulation of cosmetic products	PROC 9	
CS 10	Formulation of cosmetic products	PROC 15	

Further description of the use:

Sulisobenzone, also known as Benzophenone-4, is typically an ingredient in most sunscreens. It is used as a skin protectant from damage by short-wave UVA ultraviolet light and UVB. Applications include:

- Formulation of cosmetic products (high viscosity liquids)
- Formulation of cosmetic products (non-liquid creams)

Env CS 1: Formulation of cosmetic products (high viscosity liquids) (ERC 2)

Formulation of cosmetic products (high viscosity liquids): Cosmetics Europe 2.1f.v2

Conditions of use

Amount used, frequency and duration of use (or from service life)
<ul style="list-style-type: none"> • Daily use amount at site: <= 0.2 tonnes/day <p><i>The default daily use amount is a maximum daily site tonnage</i></p> <p><i>(MSPERC represents an indicative worst case value for the substance use rate per site. The MSPERC values</i></p>

<i>have been estimated in dependence of the size of the operation, the number of days emitting, and the concentration of the substance in a finished product (i.e. mixture)).</i> - Emission days (days/year): 250
• Annual use amount at site: <= 50.0 tonnes/year <i>Tonnage per year per site is set at <= 50 assuming at least two different sites for formulation of cosmetic products.</i>
Technical and organisational conditions and measures
• Equipment cleaning: Equipment cleaning with reduced emissions to wastewater
• Process efficiency: Process optimized for efficient use of raw materials.
• Indoor/outdoor use: Indoor use
• Type of Process: Substance applied in aqueous process solution with negligible volatilization
Conditions and measures related to biological sewage treatment plant
• Application of the STP sludge on agricultural soil: Yes
• Biological STP: Standard [Effectiveness Water: 1.137%]
• Discharge rate of STP: >= 2000 m3/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

Releases

The releases have been estimated on the basis of SPERC Cosmetics Europe 2.1f.v2: Industrial use in formulation of liquid water-borne cosmetic products - high viscosity body care products (medium scale)

Description of activities/processes covered by the SPERC

For economic reasons, formulation of mixtures requires minimized losses of raw materials during the mixing and packaging of products. Losses of raw materials via volatilization are negligible. Significant losses to the environment can be the result of cleaning of mixing vessels, tubing, production/packaging lines. High viscosity products adhere more strongly to the walls of mixing vessels, tubing, production/packaging lines. They are less efficiently transferred into the packaging. Hence, emissions caused by equipment cleaning are higher and lower for high and low viscosity products, respectively. These losses occur irrespective of the physical-chemical properties of the substance employed in a cosmetic product. For that reason, this SPERC pertains to all substances.

Technical comments

- Before treatment means: emissions as entering an on-site biological WWTP, or if absent, as leaving the site towards a municipal WWTP.
- It is assumed for simplicity that 1 kg cosmetic product (excl. water) represents ~ 1 kg COD. Actual average value for the chemical ingredients may range from 1-2.
- Emissions to soil or solid waste are not discussed here, as justified in IFRA (2009), these are considered negligible.

Product/substance domain:

Covers the whole process of formulation as it occurs in the manufacturing of liquid water-borne cosmetics and body care products. This includes storing, mixing, packaging of substances (as part of mixtures) and equipment cleaning, maintenance and associated laboratory activities.

High viscosity Body and Hair Care / Styling Products include the following like body lotion, anti-transpirants (roll-on, stick), soap formulation "saponification", hair dyes, hair gels. Typically, the viscosity of these products is specified and adjusted.

The SPERCs are relevant for operations which discharge their wastewater to treatment by a municipal sewage treatment plant.

The SPERCs cover medium operations, which produce up to 10,000 tons of finished products per year, respectively. Substance Domain: All.

Sub-SPERC Cosmetics Europe 2.1f.v2: Formulation of high viscosity body care products (medium scale); Formulation of high viscosity body care products (medium scale)
The local releases to the environment are reported in the following table.

Local releases to the environment

Release	Explanations
Water	<p>Release factor: 1% Local release rate: 2 kg/day Explanation: Releases to the wastewater can be the result of cleaning of mixing vessels, tubing, production/packaging lines with water. The spent cleaning water is discharged to the wastewater. The numbers that are presented in this SPERC originate from the study by Royal Haskoning (2009). The spERCs for Cosmetics Europe 2.1.f.v2 and Cosmetics Europe 2.1.g.v2 (high viscosity body care) reflect emission values between the product type of liquid conditioner, shampoos and shower gels (low viscosity) and non-liquid creams. Hence, these emission factors were interpolated between these values. Reference: Royal Haskoning 2009 Review and evaluation of environmental emission scenarios for fragrance materials during compounding of perfume oils and formulation of consumer products (Research Institute for Fragrance Materials Ref.:9S3975.01/R0007/Nijm, 2009).</p>
Air	<p>Release factor: 0% Local release rate: 0 kg/day Explanation: Releases of raw materials via volatilization are quantitatively very low. For that reason, the study by Royal Haskoning (2009) does not consider to establish release factors for the use of fragrance materials in the manufacturing of detergent products. It is assumed that these findings also apply for the manufacturing of personal care and cosmetics products. For that reason, the release factor is set to zero.</p>
Non agricultural soil	<p>Release factor: 0% Local release rate: - kg/day Explanation: Direct releases to soil must be avoided.</p>

Releases to waste

Release factor to external waste: 0 %

Not relevant – no obligatory RMM which divert substances to waste.

Env CS 2: Formulation of cosmetic products (non-liquid creams) (ERC 2)

Formulation of cosmetic products (non-liquid creams): Cosmetics Europe 2.1h.v2

Conditions of use

Amount used, frequency and duration of use (or from service life)
<ul style="list-style-type: none"> • Daily use amount at site: <= 0.2 tonnes/day <i>The default daily use amount is a maximum daily site tonnage (MSPERC represents an indicative worst case value for the substance use rate per site. The MSPERC values have been estimated in dependence of the size of the operation, the number of days emitting, and the concentration of the substance in a finished product (i.e. mixture)).</i> - Emission days (days/year): 250
<ul style="list-style-type: none"> • Annual use amount at site: <= 50.0 tonnes/year <i>Tonnage per year per site is set at <= 50 assuming at least two different sites for formulation of cosmetic products.</i>

Technical and organisational conditions and measures
• On site treatment of wastewater: Oil water separator
• Equipment cleaning: Equipment cleaning with minimized emissions to wastewater
• Process efficiency: Process optimized for highly efficient use of raw materials (II)
• Indoor/outdoor use: Indoor use
• Type of Process: Substance applied in aqueous process solution with negligible volatilization
Conditions and measures related to biological sewage treatment plant
• Application of the STP sludge on agricultural soil: Yes
• Biological STP: Standard [Effectiveness Water: 1.137%]
• Discharge rate of STP: >= 2000 m3/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

Releases

The releases have been estimated on the basis of SPERC Cosmetics Europe 2.1h.v2: Industrial use in formulation of liquid water-borne cosmetic products - non-liquid creams (large scale)

Description of activities/processes covered by the SPERC

For economic reasons, formulation of mixtures requires minimized losses of raw materials during the mixing and packaging of products. Losses of raw materials via volatilization are negligible. Significant losses to the environment can be the result of cleaning of mixing vessels, tubing, production/packaging lines. High viscosity products adhere more strongly to the walls of mixing vessels, tubing, production/packaging lines. They are less efficiently transferred into the packaging. Hence, emissions caused by equipment cleaning are higher and lower for high and low viscosity products, respectively. These losses occur irrespective of the physical-chemical properties of the substance employed in a cosmetic product. For that reason, this SPERC pertains to all substances.

Technical comments

- Before treatment means: emissions as entering an on-site biological WWTP, or if absent, as leaving the site towards a municipal WWTP.
- It is assumed for simplicity that 1 kg cosmetic product (excl. water) represents ~ 1 kg COD. Actual average value for the chemical ingredients may range from 1-2.
- Emissions to soil or solid waste are not discussed here, as justified in IFRA (2009), these are considered negligible.

Product/substance domain:

Covers the whole process of formulation as it occurs in the manufacturing of liquid water-borne cosmetics and body care products. This includes storing, mixing, packaging of substances (as part of mixtures) and equipment cleaning, maintenance and associated laboratory activities.

Non-Liquid Creams include the following: skin care, body care, Mascara, Make-up Foundation. Typically, the viscosity of these products is specified and adjusted.

The SPERCs are relevant for operations which discharge their wastewater to treatment by a municipal sewage treatment plant.

The SPERCs cover large operations, which produce more than 10,000 tons of finished products per year, respectively.

Substance Domain: All.

Sub-SPERC Cosmetics Europe 2.1h.v2: Formulation of non-liquid creams (large scale); Formulation of non-liquid creams (large scale)

The local releases to the environment are reported in the following table.

Local releases to the environment

Release	Explanations
Water	<p>Release factor: 1%</p> <p>Local release rate: 2 kg/day</p> <p>Explanation: Releases to the wastewater can be the result of cleaning of mixing vessels, tubing, production/packaging lines with water. The spent cleaning water is discharged to the wastewater. The numbers that are presented in this SPERC originate from the study by Royal Haskoning (2009). For Cosmetics Europe 2.1.h.v2, Cosmetics Europe 2.1.i.v2. and Cosmetics Europe 2.1.j.v2 (non-liquid creams) Royal Haskoning (2009) did not distinguish between scales of production. The release factors in these spERCs have been extrapolated (in a conservative approach) by the CosmeticsEurope sector expert team from the Royal Haskoning (2009) data based on the increasing degree of control of the manufacturing process from large to small scale. Reference: Royal Haskoning 2009 Review and evaluation of environmental emission scenarios for fragrance materials during compounding of perfume oils and formulation of consumer products (Research Institute for Fragrance Materials Ref.:9S3975.01/R0007/Nijm, 2009).</p>
Air	<p>Release factor: 0%</p> <p>Local release rate: 0 kg/day</p> <p>Explanation: Releases of raw materials via volatilization are quantitatively very low. For that reason, the study by Royal Haskoning (2009) does not consider to establish release factors for the use of fragrance materials in the manufacturing of detergent products. It is assumed that these findings also apply for the manufacturing of personal care and cosmetics products. For that reason, the release factor is set to zero.</p>
Non agricultural soil	<p>Release factor: 0%</p> <p>Local release rate: - kg/day</p> <p>Explanation: Direct releases to soil must be avoided.</p>

Releases to waste

Release factor to external waste: 0 %

Not relevant – no obligatory RMM which divert substances to waste.

Worker CS 3: Formulation of cosmetic products (PROC 1)

Closed process: no likelihood of exposure

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0

	Method
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 4: Formulation of cosmetic products (PROC 2)

Closed, continuous process with occasional controlled exposure

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 5: Formulation of cosmetic products (PROC 3)

Closed batch processes

Conditions of use

	Method
Product (Article) characteristics	

	Method
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 6: Formulation of cosmetic products (PROC 5)

Mixing or blending in batch processes.

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0

	Method
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 7: Formulation of cosmetic products (PROC 8a)

Charging or discharging substance at non-dedicated facilities.

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 8: Formulation of cosmetic products (PROC 8b)

Charging or discharging of the substance at dedicated facilities.

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0

	Method
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 9: Formulation of cosmetic products (PROC 9)

Transfer of formulations containing the substance into small containers using a dedicated filling line.

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Cosmetics typically contain ≤ 5% UV-stabilizer.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 10: Formulation of cosmetic products (PROC 15)

Testing samples in a laboratory.

Conditions of use

	Method
Product (Article) characteristics	

	Method
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Cosmetics typically contain ≤ 5% UV-stabilizer.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

EXPOSURE SCENARIO 2: WIDESPREAD USE BY PROFESSIONAL WORKERS - PROFESSIONAL USE OF COSMETIC PRODUCTS

Product category used: PC 39: Cosmetics, personal care products

Environment contributing scenario(s):		
CS 1	Professional use of cosmetic products	ERC 8a
Worker contributing scenario(s):		
CS 2	Hand-mixing with intimate contact and only PPE available.	PROC 19, PROC 21

Env CS 1: Professional use of cosmetic products (ERC 8a)

Wide dispersive indoor use of processing aids in open systems

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 0.000018 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 1.137%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100% Local release rate: 0.018 kg/day
Air	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100%
Non agricultural soil	ERC	Release factor after on site RMM: 0%

Worker CS 2: Hand-mixing with intimate contact and only PPE available. (PROC 19, PROC 21)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Cosmetics typically contain ≤ 5% UV-stabilizer.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

EXPOSURE SCENARIO 3: CONSUMER USE - CONSUMER USE OF COSMETIC PRODUCTS

Environment contributing scenario(s):		
CS 1	Consumer Use of cosmetic products	ERC 8d, ERC 8a

Further description of the use:

Wide dispersive use of processing aids in open systems

Env CS 1: Consumer Use of cosmetic products (ERC 8d)

Wide dispersive indoor use of processing aids in open systems

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 0.000036 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 1.137%]

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100% Local release rate: 0.036 kg/day
Air	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100%
Non agricultural soil	ERC	Release factor after on site RMM: 20%

EXPOSURE SCENARIO 4: FORMULATION OR RE-PACKING - FORMULATION OF CLEANING PRODUCTS

Product category formulated: PC 35: Washing and Cleaning Products

Environment contributing scenario(s):			SPERC
CS 1	Formulation of cleaning products	ERC 2	AISE 2.11.v2
Worker contributing scenario(s):			SWED
CS 2	Formulation of cleaning products	PROC 3	
CS 3	Formulating cleaners with significant possibility of exposure	PROC 4	
CS 4	Mixing or blending formulations in batch processing	PROC 5	
CS 5	Transfer of substance/mixtures at non-dedicated facilities	PROC 8a	
CS 6	Transfer of substance/mixtures at dedicated facilities	PROC 8b	
CS 7	Transfer of formulations containing the substance into smaller containers.	PROC 9	
CS 8	Testing samples in a laboratory	PROC 15	

Env CS 1: Formulation of cleaning products (ERC 2)

Adding substance to mixtures of cleaning agents.

Conditions of use

Amount used, frequency and duration of use (or from service life)
<ul style="list-style-type: none"> • Daily use amount at site: ≤ 0.4 tonnes/day <i>As daily use amount, the indicative worst case value for the substance use rate per site (M_{sperc}) was selected. M_{sperc} can be used by the registrant when starting the environmental assessment. The M_{sperc} values have been estimated in dependence of the size of the operation, the number of days emitting, and the concentration of the substance in a finished product (i.e. mixture). 250 emission days per year are assumed.</i> • Annual use amount at site: ≤ 99.0 tonnes/year
Technical and organisational conditions and measures
<ul style="list-style-type: none"> • Process efficiency: Process with efficient use of raw materials. • Equipment cleaning: Equipment cleaned with water, washing disposed of with wastewater.
Conditions and measures related to biological sewage treatment plant
<ul style="list-style-type: none"> • Application of the STP sludge on agricultural soil: Yes • Biological STP: Standard [Effectiveness Water: 1.137%] • Discharge rate of STP: ≥ 2000 m³/day
Conditions and measures related to external treatment of waste (including article waste)
<ul style="list-style-type: none"> • Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
<ul style="list-style-type: none"> • General good practice: Trained staff, spill protection including waste reuse • Place of use: Indoor

Releases

The releases have been estimated on the basis of SPERC AISE 2.11.v2: Industrial use in formulation of liquid cleaning and maintenance products: High Viscosity (small scale)
Version date: Oct 2012

Description of activities/processes covered by the SPERC

This SPERC describes SPERC parameters relevant to the manufacturing of water-borne liquid cleaning and maintenance products. Losses from the processes constitute losses of raw materials, which for economic reasons have to be avoided. Formulation of preparations requires optimized use of raw materials for inclusion into products. Losses of raw materials via volatilization are negligible. Significant losses to the environment can be the result of cleaning of mixing vessels, tubing, production/packaging lines. High viscosity products adhere more strongly to the walls of mixing vessels, tubing, production/packaging lines. They are less efficiently transferred into the packaging. Hence, emissions caused by equipment cleaning are higher and lower for high and low viscosity products, respectively. These losses occur irrespective of the physical-chemical properties of the detergent ingredient substances. For that reason, this SPERC pertains to all substances.

Product/substance domain:

Covers the whole process of manufacturing water-borne mixtures for liquid cleaning and maintenance products. This includes storing, mixing, packaging of substances (as part of mixtures) and equipment cleaning, maintenance and associated laboratory activities.

High viscosity products include the following: fabric finisher, liquid detergents, liquid detergent gels, detergent paste (hand detergents), cleaner gels (WC, bathroom, etc.), and hand dishwash. Typically, the viscosity of these products is specified and may need adjustment.

The SPERCs are relevant for operations which discharge their wastewater to treatment by a municipal sewage treatment plant.

The SPERCs cover small operations, which produce less than 1.000 tons of finished products per year, respectively.
Substance Domain: All

Sub-SPERCAISE 2.11.v2: Formulation of liquid Detergents/ Maintenance Products: High Viscosity (small scale); Formulation of liquid Detergents/ Maintenance Products: High Viscosity (small scale)
The local releases to the environment are reported in the following table.

Local releases to the environment

Release	Explanations
Water	<p>Release factor: 0.4%</p> <p>Local release rate: 1.6 kg/day</p> <p>Explanation: Releases to the wastewater can be the result of cleaning of mixing vessels, tubing, production/packaging lines with water. The spent cleaning water is discharged to the wastewater. The numbers that are presented in this SPERC originate from the study by Royal Haskoning (2009) EU TGD 2003 Technical Guidance Document on Risk Assessment. Part II, Appendix 1 A Table A2 (p 226) Franke et al., 1995 Ökobilanzierung- Sachbilanz für die Waschmittel-Konfektionierung Tenside Surf. Det, 32:(508-514) Royal Haskoning 2009 Review and evaluation of environmental emission scenarios for fragrance materials during compounding of perfume oils and formulation of consumer products (Research Institute for Fragrance Materials. Ref.:9S3975.01/R0007/Nijm, 2009).</p>
Air	<p>Release factor: 0%</p> <p>Local release rate: 0 kg/day</p> <p>Explanation: Releases of raw materials via volatilization are quantitatively very low. For that reason, the study by Royal Haskoning (2009) does not consider to establish release factors for the use of fragrance materials in the manufacturing of detergent products. For that reason, the release factor is set to zero. EU TGD 2003 Technical Guidance Document on Risk Assessment. Part II, Appendix 1 A Table A2 (p 226) Franke et al., 1995 Ökobilanzierung- Sachbilanz für die Waschmittel-Konfektionierung Tenside Surf. Det, 32:(508-514) Royal Haskoning 2009 Review and evaluation of environmental emission scenarios for fragrance materials during compounding of perfume oils and formulation of consumer products (Research Institute for Fragrance Materials. Ref.:9S3975.01/R0007/Nijm, 2009).</p>
Non agricultural soil	<p>Release factor: 0%</p> <p>Local release rate: - kg/day</p> <p>Explanation: Must be avoided EU TGD 2003 Technical Guidance Document on Risk Assessment. Part II, Appendix 1 A Table A2 (p 226) Franke et al., 1995 Ökobilanzierung- Sachbilanz für die Waschmittel-Konfektionierung Tenside Surf. Det, 32:(508-514) Royal Haskoning 2009 Review and evaluation of environmental emission scenarios for fragrance materials during compounding of perfume oils and formulation of consumer products (Research Institute for Fragrance Materials. Ref.:9S3975.01/R0007/Nijm, 2009).</p>

Releases to waste

Release factor to external waste: 0 %

Not relevant – no obligatory RMM which divert substances to waste.

EU TGD 2003 Technical Guidance Document on Risk Assessment. Part II, Appendix 1 A Table A2 (p 226)

Franke et al., 1995 Ökobilanzierung- Sachbilanz für die Waschmittel-Konfektionierung Tenside Surf. Det, 32:(508-514)

Royal Haskoning 2009 Review and evaluation of environmental emission scenarios for fragrance materials during

compounding of perfume oils and formulation of consumer products (Research Institute for Fragrance Materials. Ref.:9S3975.01/R0007/Nijm, 2009).

Worker CS 2: Formulation of cleaning products (PROC 3)

Closed batch processes

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 3: Formulating cleaners with significant possibility of exposure (PROC 4)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0

	Method
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 4: Mixing or blending formulations in batch processing (PROC 5)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 5: Transfer of substance/mixtures at non-dedicated facilities (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0

	Method
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 6: Transfer of substance/mixtures at dedicated facilities (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 7: Transfer of formulations containing the substance into smaller containers. (PROC 9)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 1.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Cleaning products typically contain < 1% UV-stabilizer (mostly < 0.1%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 8: Testing samples in a laboratory (PROC 15)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 1.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin</i>	TRA Workers 3.0

	Method
<i>irritation at concentrations > 10%. Cleaning products typically contain < 1% UV-stabilizer (mostly < 0.1%).</i>	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

EXPOSURE SCENARIO 5: WIDESPREAD USE BY PROFESSIONAL WORKERS - USE BY PROFESSIONAL WORKERS OF CLEANING PRODUCTS CONTAINING THE SUBSTANCE

Product category used: PC 35: Washing and Cleaning Products

Environment contributing scenario(s):		
CS 1	Use by professional workers of cleaning products containing the substance	ERC 8d, ERC 8a
Worker contributing scenario(s):		
CS 2	Transfer of cleaning agents containing the substance at non-dedicated facilities	PROC 8a
CS 3	Use of diluted cleaning agents by brushing	PROC 10
CS 4	Spray applications of cleaning agents containing the substance	PROC 11
CS 5	Hand mixing of cleaning agents containing the substance	PROC 19

Further description of the use:

Use includes liquid cleaners, e.g. toilet cleaner, floor care cleaner. Concentrations of substance typically used: 0.01–0.02% and always below 0.1%

Env CS 1: Use by professional workers of cleaning products containing the substance (ERC 8d)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: ≤ 0.000005 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 1.137%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100% Local release rate: 4.95E-3 kg/day
Air	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100%
Non agricultural soil	ERC	Release factor after on site RMM: 20%

Worker CS 2: Transfer of cleaning agents containing the substance at non-dedicated facilities (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 1.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Cleaning products typically contain < 1% UV-stabilizer (mostly < 0.1%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 3: Use of diluted cleaning agents by brushing (PROC 10)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 1.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0

	Method
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Cleaning products typically contain < 1% UV-stabilizer (mostly < 0.1%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 4: Spray applications of cleaning agents containing the substance (PROC 11)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 1.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Cleaning products typically contain < 1% UV-stabilizer (mostly < 0.1%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 5: Hand mixing of cleaning agents containing the substance (PROC 19)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 1.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Cleaning products typically contain < 1% UV-stabilizer (mostly < 0.1%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

EXPOSURE SCENARIO 6: CONSUMER USE - CONSUMER USE OF CLEANING PRODUCTS

Environment contributing scenario(s):		
CS 1	Consumer use of cleaning products	ERC 8d, ERC 8a
Consumer contributing scenario(s):		
CS 2	Consumer use of cleaning products containing the substance	PC 35

Further description of the use:

Consumer use of liquid cleaners: toilet cleaner, floor care cleaners and hand dish-washing detergents. Concentrations typically used: 0.01–0.02% and always below 0.1%.

Env CS 1: Consumer use of cleaning products (ERC 8d)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: ≤ 0.000049 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 1.137%]

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100% Local release rate: 0.05 kg/day
Air	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100%
Non agricultural soil	ERC	Release factor after on site RMM: 20%

Cons CS 2: Consumer use of cleaning products containing the substance (PC 35)

Includes liquid cleaners (toilet cleaner, floor care) and hand dish-washing detergents. Concentrations typically used: 0.01–0.02% and always below 0.1%.

Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: $\leq 1.0\%$	TRA Consumers 3.1 (R15)
• Physical form of the used product: Liquid	
• Exposure via inhalation route: Inhalation exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes <i>Continuous daily use is considered.</i>	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant <i>Only incidental, in general not chronic.</i>	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency of use over a year: Frequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 3.0 events per day	TRA Consumers 3.1 (R15)
• Dermal exposure duration: ≤ 60.0 min	
Information and behavioral advice for consumers	
• Adult/child assumed: Child	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Body parts potentially exposed: Hands and forearms	TRA Consumers 3.1

	Method
	(R15)
• Dermal transfer factor: = 1.0	TRA Consumers 3.1 (R15)

EXPOSURE SCENARIO 7: FORMULATION OR RE-PACKING - FORMULATION OF COATINGS

Product category formulated: PC 1: Adhesives, sealants; PC 9a: Coatings and Paints, Thinners, paint removers

Environment contributing scenario(s):		
CS 1	Formulation of coatings	ERC 2
Worker contributing scenario(s):		
CS 2	Formulation of coatings in closed batch processes	PROC 3
CS 3	Production of coatings with incidental risk of exposure	PROC 4
CS 4	Mixing of coatings in batch processes	PROC 5
CS 5	Transfer of substance/mixtures at non-dedicated facilities.	PROC 8a
CS 6	Transfer of substance/mixtures at dedicated facilities.	PROC 8b
CS 7	Transfer of substance containing coatings to smaller containers at dedicated filling lines	PROC 9
CS 8	Testing samples from coatings at the laboratory.	PROC 15

Further description of the use:

Sulisobenzone, also known as Benzophenone-4, is typically an ingredient for protection of paints to UV-light. It is used in light stabilizer dispersions together with Hindered Amines Light Stabilizers (HALS). These are pre-dispersed at high loading in a water-based optimized formulation to offer superior stabilization of water-based coatings. The concentration of the UV-stabilizer depends on the concentration of HALS and ranges from > 0 % to < 5%.

Env CS 1: Formulation of coatings (ERC 2)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: <= 0.2 tonnes/day <i>The default daily use amount is a maximum daily site tonnage. Emission days (days/year): 250</i>
• Annual use amount at site: <= 50.0 tonnes/year
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 1.137%]
• Discharge rate of STP: >= 2000 m3/day
• Application of the STP sludge on agricultural soil: Yes
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 18000 m3/day

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not

account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 2% Release factor after on site RMM: 2% Local release rate: 4 kg/day
Air	ERC	Release factor before on site RMM: 2.5% Release factor after on site RMM: 2.5% Local release rate: 5 kg/day
Non agricultural soil	ERC	Release factor after on site RMM: 0.01%

Worker CS 2: Formulation of coatings in closed batch processes (PROC 3)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 3: Production of coatings with incidental risk of exposure (PROC 4)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0

	Method
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 4: Mixing of coatings in batch processes (PROC 5)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 5: Transfer of substance/mixtures at non-dedicated facilities. (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 6: Transfer of substance/mixtures at dedicated facilities. (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0

	Method
<ul style="list-style-type: none"> • Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i> 	TRA Workers 3.0
Other conditions affecting workers exposure	
<ul style="list-style-type: none"> • Place of use: Indoor 	TRA Workers 3.0
<ul style="list-style-type: none"> • Operating temperature: <= 40.0 °C 	TRA Workers 3.0

Worker CS 7: Transfer of substance containing coatings to smaller containers at dedicated filling lines (PROC 9)

Conditions of use

	Method
Product (Article) characteristics	
<ul style="list-style-type: none"> • Percentage (w/w) of substance in mixture/article: <= 5.0 % 	TRA Workers 3.0
<ul style="list-style-type: none"> • Physical form of the used product: Liquid 	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
<ul style="list-style-type: none"> • Duration of activity: <= 8.0 h/day 	TRA Workers 3.0
Technical and organisational conditions and measures	
<ul style="list-style-type: none"> • General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%] 	TRA Workers 3.0
<ul style="list-style-type: none"> • Occupational Health and Safety Management System: Advanced 	TRA Workers 3.0
<ul style="list-style-type: none"> • Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%] 	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
<ul style="list-style-type: none"> • Respiratory protection: No [Effectiveness Inhalation: 0%] 	TRA Workers 3.0
<ul style="list-style-type: none"> • Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i> 	TRA Workers 3.0
Other conditions affecting workers exposure	
<ul style="list-style-type: none"> • Place of use: Indoor 	TRA Workers 3.0
<ul style="list-style-type: none"> • Operating temperature: <= 40.0 °C 	TRA Workers 3.0

Worker CS 8: Testing samples from coatings at the laboratory. (PROC 15)

Conditions of use

	Method
Product (Article) characteristics	
<ul style="list-style-type: none"> • Percentage (w/w) of substance in mixture/article: <= 5.0 % 	TRA Workers 3.0
<ul style="list-style-type: none"> • Physical form of the used product: Liquid 	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
<ul style="list-style-type: none"> • Duration of activity: <= 8.0 h/day 	TRA Workers 3.0

	Method
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

EXPOSURE SCENARIO 8: USE AT INDUSTRIAL SITES - INDUSTRIAL USE OF COATINGS

Product category used: PC 1: Adhesives, sealants; PC 9a: Coatings and Paints, Thinners, paint removers

Environment contributing scenario(s):			SPERC
CS 1	Industrial use of coatings	ERC 4	EFCC 4.1b.v1
Worker contributing scenario(s):			SWED
CS 2	Spraying of coatings containing the substance at industrial level.	PROC 7	
CS 3	Application of coatings containing the substance at industrial level.	PROC 10	
CS 4	Industrial treatment of articles with coatings by dipping or pouring	PROC 13	

Env CS 1: Industrial use of coatings (ERC 4)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily use amount at site: ≤ 0.15 tonnes/day <i>The default value is a typical maximum site tonnage, based on sector knowledge. It is the substance maximum use rate in a typical operation (M_{sperc}). By default, 220 emission days/year are assumed.</i>
• Annual use amount at site: ≤ 3.0 tonnes/year
Technical and organisational conditions and measures
• Indoor/outdoor use: Covers Indoor and Outdoor use
• Type of Process: Solvent based process
• Equipment cleaning: Equipment cleaned with organic solvent, washings are collected and disposed of as solvent waste.

• Process efficiency: Process with efficient use of raw materials.
Conditions and measures related to biological sewage treatment plant
• Application of the STP sludge on agricultural soil: Yes
• Biological STP: Standard [Effectiveness Water: 1.137%]
• Discharge rate of STP: >= 2000 m3/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• General good practice: Trained staff, spill protection including waste reuse

Releases

The releases have been estimated on the basis of SPERC EFCC 4.1b.v1: Industrial Use of Volatile and Non-Volatile Substances in Construction Chemicals - volatile substances (additives)

Description of activities/processes covered by the SPERC

A relatively small part of the total quantity of construction chemicals has an industrial use during the production of prefabs.

The industrial application can be distinguished as follows:

- Production of preparation or articles by tableting, compression, extrusion, pelettisation (for substances which are bound into matrix, e.g. binding agents or for processing aids, e.g. solvents)
- Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
- Roller application or brushing
- Spraying (in industrial settings and applications)
- Dipping and pouring of articles

Product/substance domain:

Covers the application of construction chemicals for a wide range of purposes by industrial uses. Covers different construction chemicals application techniques for indoor use.

Substance Domain: Solvents and volatiles which quantitatively evaporate upon curing of the construction chemical.

Sub-SPERCEFFCC 4.1b.v1: Industrial use of volatile substances (additives) in Construction Chemicals; Industrial use of volatile substances (additives) in Construction Chemicals

The local releases to the environment are reported in the following table.

Local releases to the environment

Release	Explanations
Water	<p>Release factor: 0%</p> <p>Local release rate: 0 kg/day</p> <p>Explanation: OECD Emission Scenario Document, Series No. 22 Coating Industry (Paints, Lacquers and Varnishes), July 2009. Regarding environmental emissions, the industrial use of construction chemicals is very similar to related industrial uses of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the SPERC Factsheet for the formulation of adhesives and sealants</p>
Air	<p>Release factor: 98.5%</p> <p>Local release rate: 147.7 kg/day</p> <p>Explanation: OECD Emission Scenario Document, Series No. 22 Coating Industry (Paints, Lacquers and</p>

Release	Explanations
	Varnishes), July 2009. Regarding environmental emissions, the industrial use of construction chemicals is very similar to related industrial uses of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the SPERC Factsheet for the formulation of adhesives and sealants
Non agricultural soil	Release factor: 0% Local release rate: - kg/day Explanation: OECD Emission Scenario Document, Series No. 22 Coating Industry (Paints, Lacquers and Varnishes), July 2009. Regarding environmental emissions, the industrial use of construction chemicals is very similar to related industrial uses of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the SPERC Factsheet for the formulation of adhesives and sealants

Releases to waste

Release factor to external waste: 0 %

OECD Emission Scenario Document, Series No. 22 Coating Industry (Paints, Lacquers and Varnishes), July 2009. Regarding environmental emissions, the industrial use of construction chemicals is very similar to related industrial uses of paints, lacquers and varnishes. For that reason, release fractions defined in the OECD Emission Scenario Document have been adopted for the SPERC Factsheet for the formulation of adhesives and sealants

Worker CS 2: Spraying of coatings containing the substance at industrial level. (PROC 7)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 3: Application of coatings containing the substance at industrial level. (PROC 10)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 4: Industrial treatment of articles with coatings by dipping or pouring (PROC 13)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	

	Method
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

EXPOSURE SCENARIO 9: WIDESPREAD USE BY PROFESSIONAL WORKERS - USE BY PROFESSIONAL WORKERS OF COATINGS

Product category used: PC 1: Adhesives, sealants; PC 9a: Coatings and Paints, Thinners, paint removers

Environment contributing scenario(s):		
CS 1	Use by professional workers of coatings indoors.	ERC 8c
CS 2	Use by professional workers of coatings outdoors.	ERC 8f
Worker contributing scenario(s):		
CS 3	Transfer of coatings containing the substance at low concentrations at non-dedicated facilities.	PROC 8a
CS 4	Application of coatings containing the substance at low concentrations	PROC 10
CS 5	Spray application of coatings containing the substance at low concentrations	PROC 11
CS 6	Professional treatment of articles with coatings by dipping or pouring	PROC 13

Env CS 1: Use by professional workers of coatings indoors. (ERC 8c)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: ≤ 0.000018 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 1.137%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 30% Release factor after on site RMM: 30% Local release rate: 5.45E-3 kg/day
Air	ERC	Release factor before on site RMM: 15% Release factor after on site RMM: 15%
Non agricultural soil	ERC	Release factor after on site RMM: 0%

Env CS 2: Use by professional workers of coatings outdoors. (ERC 8f)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 0.000018 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 1.137%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 5% Release factor after on site RMM: 5% Local release rate: 9.08E-4 kg/day
Air	ERC	Release factor before on site RMM: 15% Release factor after on site RMM: 15%
Non agricultural soil	ERC	Release factor after on site RMM: 0.5%

Worker CS 3: Transfer of coatings containing the substance at low concentrations at non-dedicated facilities. (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	

	Method
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 4: Application of coatings containing the substance at low concentrations (PROC 10)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 5: Spray application of coatings containing the substance at low concentrations (PROC 11)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 6: Professional treatment of articles with coatings by dipping or pouring (PROC 13)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0

	Method
<ul style="list-style-type: none"> • Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i> 	TRA Workers 3.0
Other conditions affecting workers exposure	
<ul style="list-style-type: none"> • Place of use: Indoor 	TRA Workers 3.0
<ul style="list-style-type: none"> • Operating temperature: ≤ 40.0 °C 	TRA Workers 3.0

EXPOSURE SCENARIO 10: CONSUMER USE - CONSUMER USE OF COATINGS CONTAINING THE SUBSTANCE AT LOW CONCENTRATIONS

Environment contributing scenario(s):		
CS 1	Consumer use of coatings containing the substance at low concentrations indoors.	ERC 8c
CS 2	Consumer use of coatings containing the substance at low concentrations outdoors	ERC 8f
Consumer contributing scenario(s):		
CS 3	Consumer use of coatings containing the substance at low concentrations	PC 9a

Env CS 1: Consumer use of coatings containing the substance at low concentrations indoors. (ERC 8c)

Conditions of use

Amount used, frequency and duration of use (or from service life)
<ul style="list-style-type: none"> • Daily local widespread use amount: ≤ 0.000018 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
<ul style="list-style-type: none"> • Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
<ul style="list-style-type: none"> • Biological STP: Standard [Effectiveness Water: 1.137%]

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 30% Release factor after on site RMM: 30% Local release rate: 5.45E-3 kg/day
Air	ERC	Release factor before on site RMM: 15%

Release	Release estimation method	Explanations
		Release factor after on site RMM: 15%
Non agricultural soil	ERC	Release factor after on site RMM: 0%

Env CS 2: Consumer use of coatings containing the substance at low concentrations outdoors (ERC 8f)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 0.000018 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 1.137%]

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 5% Release factor after on site RMM: 5% Local release rate: 9.08E-4 kg/day
Air	ERC	Release factor before on site RMM: 15% Release factor after on site RMM: 15%
Non agricultural soil	ERC	Release factor after on site RMM: 0.5%

Cons CS 3: Consumer use of coatings containing the substance at low concentrations (PC 9a)

Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Consumers 3.1 (R15)
• Physical form of the used product: Liquid	
• Exposure via inhalation route: Inhalation exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1

	Method
	(R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency of use over a year: Frequent	TRA Consumers 3.1 (R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed: Adult	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Body parts potentially exposed: Hands <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Coatings typically contain < 5% UV-stabilizer (mostly ≤ 3%).</i>	TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 1.0	TRA Consumers 3.1 (R15)

EXPOSURE SCENARIO 11: FORMULATION OR RE-PACKING - FORMULATION OF AGROCHEMICALS

Product category formulated: PC 27: Plant Protection Products

Environment contributing scenario(s):		
CS 1	Formulation of agrochemicals	ERC 2
Worker contributing scenario(s):		
CS 2	Formulation of agrochemical mixtures	PROC 3
CS 3	Production of agrochemical formulations containing the substance	PROC 4
CS 4	Mixing constituents to produce agrochemical formulations	PROC 5
CS 5	Transfer of substance/mixtures at non-dedicated facilities	PROC 8a
CS 6	Transfer of substance/mixtures at dedicated facilities	PROC 8b
CS 7	Transfer of agrochemical formulations into smaller containers applying a dedicated filling line.	PROC 9
CS 8	Testing samples of agrochemical formulations at the laboratory	PROC 15

Env CS 1: Formulation of agrochemicals (ERC 2)

Conditions of use

Amount used, frequency and duration of use (or from service life)
<ul style="list-style-type: none"> Daily use amount at site: ≤ 0.2 tonnes/day <p><i>The default daily use amount is a maximum daily site tonnage and represents an indicative worst case value for the substance use rate per site. The concentration of the substance is below 1%, thus the total tonnage of product per day formulated is > factor 100 higher. The ERC values have been estimated in dependence of the size of the operation, the number of days emitting, and the concentration of the substance in a finished product (i.e. mixture)). Emission days (days/year): 250</i></p>

• Annual use amount at site: <= 50.0 tonnes/year
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 1.137%]
• Discharge rate of STP: >= 2000 m3/day
• Application of the STP sludge on agricultural soil: Yes
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Receiving surface water flow rate: >= 18000 m3/day

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 2% Release factor after on site RMM: 2% Local release rate: 4 kg/day
Air	ERC	Release factor before on site RMM: 2.5% Release factor after on site RMM: 2.5% Local release rate: 5 kg/day
Non agricultural soil	ERC	Release factor after on site RMM: 0.01%

Worker CS 2: Formulation of agrochemical mixtures (PROC 3)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin</i>	TRA Workers 3.0

	Method
<i>irritation at concentrations > 10%.</i>	
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 3: Production of agrochemical formulations containing the substance (PROC 4)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 4: Mixing constituents to produce agrochemical formulations (PROC 5)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	

	Method
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 5: Transfer of substance/mixtures at non-dedicated facilities (PROC 8a)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 6: Transfer of substance/mixtures at dedicated facilities (PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 100.0 %	TRA Workers 3.0
• Physical form of the used product: Solid (very dusty form)	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: Yes (Chemically resistant gloves conforming to EN374) and (other) appropriate dermal protection [Effectiveness Dermal: 80%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: <= 40.0 °C	TRA Workers 3.0

Worker CS 7: Transfer of agrochemical formulations into smaller containers applying a dedicated filling line. (PROC 9)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Advanced	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0

	Method
<ul style="list-style-type: none"> • Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Plant protection products typically contain ≤ 5% UV-stabilizer.</i> 	TRA Workers 3.0
Other conditions affecting workers exposure	
<ul style="list-style-type: none"> • Place of use: Indoor 	TRA Workers 3.0
<ul style="list-style-type: none"> • Operating temperature: ≤ 40.0 °C 	TRA Workers 3.0

Worker CS 8: Testing samples of agrochemical formulations at the laboratory (PROC 15)

Conditions of use

	Method
Product (Article) characteristics	
<ul style="list-style-type: none"> • Percentage (w/w) of substance in mixture/article: ≤ 5.0 % 	TRA Workers 3.0
<ul style="list-style-type: none"> • Physical form of the used product: Liquid 	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
<ul style="list-style-type: none"> • Duration of activity: ≤ 8.0 h/day 	TRA Workers 3.0
Technical and organisational conditions and measures	
<ul style="list-style-type: none"> • General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%] 	TRA Workers 3.0
<ul style="list-style-type: none"> • Occupational Health and Safety Management System: Advanced 	TRA Workers 3.0
<ul style="list-style-type: none"> • Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%] 	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
<ul style="list-style-type: none"> • Respiratory protection: No [Effectiveness Inhalation: 0%] 	TRA Workers 3.0
<ul style="list-style-type: none"> • Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Plant protection products typically contain ≤ 5% UV-stabilizer.</i> 	TRA Workers 3.0
Other conditions affecting workers exposure	
<ul style="list-style-type: none"> • Place of use: Indoor 	TRA Workers 3.0
<ul style="list-style-type: none"> • Operating temperature: ≤ 40.0 °C 	TRA Workers 3.0

EXPOSURE SCENARIO 12: WIDESPREAD USE BY PROFESSIONAL WORKERS - USE BY PROFESSIONAL WORKERS OF AGROCHEMICALS

Product category used: PC 27: Plant Protection Products

Environment contributing scenario(s):		
CS 1	Use by professional workers of agrochemicals	ERC 8d, ERC 8a
Worker contributing scenario(s):		
CS 2	Transfer of agrochemical formulations containing the substance	PROC 8a, PROC 8b

CS 3	at non-dedicated facilities. Spray application of agrochemical formulations containing the substance by professional workers	PROC 11
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Env CS 1: Use by professional workers of agrochemicals (ERC 8d)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 0.000036 tonnes/day
Conditions and measures related to biological sewage treatment plant
• Biological STP: Standard [Effectiveness Water: 1.137%]
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100% Local release rate: 0.036 kg/day
Air	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100%
Non agricultural soil	ERC	Release factor after on site RMM: 20%

Worker CS 2: Transfer of agrochemical formulations containing the substance at non-dedicated facilities. (PROC 8a, PROC 8b)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 5.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: <= 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	

	Method
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Plant protection products typically contain ≤ 5% UV-stabilizer.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

Worker CS 3: Spray application of agrochemical formulations containing the substance by professional workers (PROC 11)

Conditions of use

	Method
Product (Article) characteristics	
• Percentage (w/w) of substance in mixture/article: ≤ 1.0 %	TRA Workers 3.0
• Physical form of the used product: Liquid	TRA Workers 3.0
Amount used (or contained in articles), frequency and duration of use/exposure	
• Duration of activity: ≤ 8.0 h/day	TRA Workers 3.0
Technical and organisational conditions and measures	
• General ventilation: Basic general ventilation (1-3 air changes per hour) [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Occupational Health and Safety Management System: Basic	TRA Workers 3.0
• Local exhaust ventilation: No [Effectiveness Inhalation: 0%, Dermal: 0%]	TRA Workers 3.0
Conditions and measures related to personal protection, hygiene and health evaluation	
• Respiratory protection: No [Effectiveness Inhalation: 0%]	TRA Workers 3.0
• Dermal protection: No [Effectiveness Dermal: 0%] <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Plant protection products typically contain ≤ 5% UV-stabilizer.</i>	TRA Workers 3.0
Other conditions affecting workers exposure	
• Place of use: Indoor	TRA Workers 3.0
• Operating temperature: ≤ 40.0 °C	TRA Workers 3.0

EXPOSURE SCENARIO 13: CONSUMER USE - CONSUMER USE OF AGROCHEMICAL PRODUCTS CONTAINING THE SUBSTANCE AT LOW CONCENTRATIONS

Environment contributing scenario(s):		
CS 1	Consumer use of agrochemical products containing the substance at low concentrations	ERC 8d, ERC 8a
Consumer contributing scenario(s):		

CS 2	Consumer use of agrochemical products containing the substance at low concentrations	PC 27
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Env CS 1: Consumer use of agrochemical products containing the substance at low concentrations (ERC 8d)

Conditions of use

Amount used, frequency and duration of use (or from service life)
• Daily local widespread use amount: <= 0.000018 tonnes/day
Conditions and measures related to external treatment of waste (including article waste)
• Particular considerations on the waste treatment operations
Other conditions affecting environmental exposure
• Biological STP: Standard [Effectiveness Water: 1.137%]

Releases

The local releases to the environment are reported in the following table. Note that the releases reported do not account for the removal in the modelled biological STP.

Local releases to the environment

Release	Release estimation method	Explanations
Water	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100% Local release rate: 0.018 kg/day
Air	ERC	Release factor before on site RMM: 100% Release factor after on site RMM: 100%
Non agricultural soil	ERC	Release factor after on site RMM: 20%

Cons CS 2: Consumer use of agrochemical products containing the substance at low concentrations (PC 27)

Conditions of use

	Method
Product (article) characteristics	
• Percentage (w/w) of substance in mixture/article: <= 1.0 %	TRA Consumers 3.1 (R15)
• Physical form of the used product: Liquid	
• Exposure via inhalation route: Inhalation exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
• Exposure via dermal route: Yes	TRA Consumers 3.1 (R15)
• Exposure via oral route: Oral exposure is considered to be not relevant	TRA Consumers 3.1 (R15)
Amount used (or contained in articles), frequency and duration of use/exposure	
• Frequency of use over a year: Frequent	TRA Consumers 3.1

	Method
	(R15)
• Frequency of use over a day: = 1.0 events per day	TRA Consumers 3.1 (R15)
Information and behavioral advice for consumers	
• Adult/child assumed: Adult	TRA Consumers 3.1 (R15)
Other conditions affecting consumers exposure	
• Body parts potentially exposed: Inside hands / one hand / palm of hands <i>Substance is classified as skin Irritant cat. 2 with a risk of causing serious skin irritation at concentrations > 10%. Plant protection products typically contain ≤ 5% UV-stabilizer.</i>	TRA Consumers 3.1 (R15)
• Dermal transfer factor: = 1.0	TRA Consumers 3.1 (R15)

TABLE OF CHANGES

Version	Changes	Date
1	First edition	2016-10-24
2	New Use Areas are added (Coatings, Cleaners, Agrochemicals)	2018-10-12