

SAFETY DATA SHEET

According to Regulation (EC) No. 1907/2006 (REACH) Article 31, Annex II as amended.

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

1.1 Product identifier:

Product name: Cyclopentasiloxane – CHEM12

Product No.: PRCO90001250

Additional identification:

Chemical name: Decamethylcyclopentasiloxane

CAS-No.: 541-02-6

INDEX No.: -

EC No.: 208-764-9

REACH Registration No.: 01-2119511367-43-0003

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

Identified uses: Preparation of speciality cosmetics.

Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet:

Supplier:

Supplies for Candles Ltd
Unit E Swinton Bridge Industrial Estate
Whitelee Road
Swinton
South Yorkshire
S64 8BH
UK

Telephone:

01709 257151

1.4 Emergency telephone number:

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

The product has not been classified as hazardous according to the legislation in force.

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

Not classified

2.2 Label Elements: Not applicable.

2.3 Other hazards:

Physical Hazards: No specific recommendations.

Health Hazards:

Inhalation:	No specific symptoms noted.
Eye contact:	No specific symptoms noted.
Skin contact:	No specific symptoms noted.
Ingestion:	No specific symptoms noted.
Other Health Effects:	No other information noted.
Environmental Hazards:	Not regarded as dangerous for the environment.
Results of PBT and vPvB assessment:	This product meets the PBT (Persistent, Bioaccumulative and Toxic) and/or vPvB (very Persistent and very Bioaccumulative) criteria according to REACH regulation, Annex XIII.
Endocrine Disruption - Health:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Endocrine Disruption - Environment:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Other hazards:	No other information noted.

SECTION 3: Composition/information on ingredients

3.1 Substances:

Chemical name:	Decamethylcyclopentasiloxane
INDEX No.:	-
CAS-No.:	541-02-6
EC No.:	208-764-9
REACH Registration No.:	01-2119511367-43-0003
Purity:	>90%

Impurities and stabilizing additives which contribute to the hazard:

Chemical name	Concentration*	Type	CAS-No.	EC No.	Notes
Dodecamethylcyclohexasiloxane	0,1 - <1%	Impurities	540-97-6	208-762-8	## vPvB

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

This substance has workplace exposure limit(s).

This substance is listed as SVHC.

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

ED: Endocrine Disruptor

Classification:

Chemical name	Classification	Specific concentration limits / ATE / M-Factor:	Notes
Dodecamethylcyclohexasiloxane	None known.		

The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information:

No specific first aid measures noted. Get medical attention if symptoms occur.

4.1 Description of first aid measures:

Inhalation:

Under normal conditions of intended use, this material is not expected to be an inhalation hazard. In case of inhalation: Move person into fresh air and keep at rest. Get medical attention if symptoms occur.

Skin contact:

Remove contaminated clothing and shoes. Wash skin with soap and water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse.

Eye contact:

In the event of contact with the eyes, rinse thoroughly with clean water for at least 15 minutes. Get medical attention promptly if symptoms occur after washing.

Ingestion:

Do not induce vomiting. Rinse mouth thoroughly with water. Get medical attention if symptoms occur.

Personal Protection for First-aid Responders:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). Refer to sections 5 and 8 for information on emergency procedures and protective equipment.

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

No specific symptoms noted. For further information, please refer to Section 11 of the SDS.

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

Notes to the physician:

No specific recommendations. Show this Safety Data Sheet to the attending physician.

SECTION 5: Firefighting measures

5.1 Extinguishing media:

Suitable extinguishing media:

Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media:

Avoid water in straight hose stream; will scatter and spread fire.

5.2 Special hazards arising from the substance or mixture:

Product will burn under fire conditions. Thermal decomposition or combustion may liberate carbon oxides, silicon oxides and other toxic gases or vapors.

5.3 Advice for firefighters:

Special fire fighting procedures:

Use standard firefighting procedures and consider the hazards of other involved materials. Remove undamaged containers from fire area if it is safe to do so. Evacuate to a safe location and contact the emergency services. Water spray should be used to cool containers. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

Special protective equipment for fire-fighters:

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Use personal protective equipment. See Section 8 of the SDS for Personal Protective Equipment.

6.2 Environmental Precautions:

Do not discharge into drains, water courses or onto the ground. Collect spillage. Use containment for a large spill.

6.3 Methods and material for containment and cleaning up:

Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Container must be kept tightly closed. Absorb with sand or other inert absorbent. To clean the floor and all objects contaminated by this material, use an appropriate solvent (see § 9). Flush area with plenty of water. Incinerate in suitable combustion chamber.

6.4 Reference to other sections:

Caution: Contaminated surfaces may be slippery. For waste disposal, see Section 13 of the SDS.

SECTION 7: Handling and storage

7.1 Precautions for safe handling:

Precautions:

Handle in accordance with good industrial hygiene and safety practices. No special precautions are necessary beyond normal good hygiene practices. See Section 8 of the SDS for additional personal protection advice when handling this product. Take care to prevent spills, waste and minimize release to the environment. In case of spills, beware of slippery floors and surfaces.

Hygiene measures:

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

7.2 Conditions for safe storage, including any incompatibilities:

Store in accordance with local/regional/national regulations. Avoid discharge into drains, water courses or onto the ground. Store in a dry place. Keep in properly labelled containers. Keep above the chemical's freezing point. Protect against physical damage and/or friction. Store away from incompatible materials. For further information, refer to section 10: "Stability and Reactivity".

Packaging frequently used at our sites:

Steel drums coated with epoxy-resin.

7.3 Specific end use(s):

No specific recommendations. See the technical data sheet on this product for further information.

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters:

Occupational Exposure Limits:

None of the components have assigned exposure limits.

DNEL-Values:

Decamethylcyclopentasiloxane

Type	Route of Exposure	DNEL-Values	Remarks
Workers ; Systemic, long-term	Inhalation	97,3 mg/m3	Repeated dose toxicity
Workers ; Systemic, short-term	Inhalation	-	No hazard identified
Workers ; Local, long-term	Inhalation	24,2 mg/m3	Repeated dose toxicity
Workers ; Local, short-term	Inhalation	-	No hazard identified

Workers ; Systemic, long-term	Dermal	-	No hazard identified
Workers ; Systemic, short-term	Dermal	-	No hazard identified
Workers ; Local, long-term	Dermal	-	No hazard identified
Workers ; Local, short-term	Dermal	-	No hazard identified
Workers ; Local effect	Eyes	-	No hazard identified
General population ; Systemic, long-term	Inhalation	17,3 mg/m3	Repeated dose toxicity
General population ; Systemic, short-term	Inhalation	-	No hazard identified
General population ; Local, long-term	Inhalation	4,3 mg/m3	Repeated dose toxicity
General population ; Local, short-term	Inhalation	-	No hazard identified
General population ; Systemic, long-term	Dermal	-	No hazard identified
General population ; Systemic, short-term	Dermal	-	No hazard identified
General population ; Local, long-term	Dermal	-	No hazard identified
General population ; Local, short-term	Dermal	-	No hazard identified
General population ; Systemic, long-term	Oral	5 mg/kg bw/day	Repeated dose toxicity
General population ; Systemic, short-term	Oral	-	No hazard identified
General population ; Local effect	Eyes	-	No hazard identified

PNEC-Values:

Decamethylcyclopentasiloxane

Environmental compartment	PNEC-Values	Remarks
Aquatic (freshwater)	> 1,2 µg/l	
Aquatic (marine water)	> 0,12 µg/l	
Sediment (freshwater)	11 mg/kg dry weight	
Sediment (marine water)	1,1 mg/kg dry weight	
Sewage treatment plant	> 10 mg/l	
Soil	1,27 mg/kg soil dw	
Air	-	No hazard identified
Predator	16 mg/kg food	Oral

Monitoring methods:

Ensure workers' exposure monitoring in accordance with national and European regulations in force, in particular Directives 98/24/EC and 2004/37/EC.

8.2 Exposure controls:

Appropriate Engineering Controls:

Use engineering controls to reduce air contamination to permissible exposure level. The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Engineering controls are always preferable to personal protective equipment. Control measures to consider: Provide adequate ventilation. In case of inadequate ventilation: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment:

Avoid inhalation of vapors/aerosols/dusts and contact with skin and eyes. Personal protective equipment should be chosen according to applicable standards, adapted to the conditions of use of the product and in discussion with the supplier of the personal protective equipment.

Eye/face protection:

Safety glasses with side shields.

Hand Protection:

This recommendation is valid only for the product named in this safety data sheet supplied by us, and only for the indicated intended use purposes. In case this product will be mixed with other substances, you need to contact a supplier of CE approved protective gloves in order to determine the appropriate gloves.

Prolonged or repeated contact:

Material: Nitrile.

Glove thickness: 1,25 mm

Guideline: EN374-3

Additional Information: Gloves commonly used in Elkem's facilities.

Short contact:

Material: Nitrile / Neoprene

Glove thickness: 0,198 mm

Guideline: EN374-3

Additional Information: Gloves commonly used in Elkem's labs.

Skin and Body Protection:

Wear appropriate clothing to prevent any possibility of skin contact. Isolate contaminated clothing and wash before reuse. In case of splashes: Wear apron or special protective clothing.

Respiratory Protection:

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Use the following CE approved air-purifying respirator: Breathing apparatus with combined filter type ABEK. Wear respiratory protection with combination filter (dust and gas filter) during operations leading to the formation of dust/aerosols.

Environmental Controls:

See sections 7 and 13 of the Safety Data Sheet.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Appearance:

Physical state:

Liquid

Form:

Slightly viscous

Color:

Colorless

Odor:

Odorless

pH:

By definition, pH measurement consists in the determination of hydrogen ions concentration in solution, generally aqueous. Silicones products are hydrophobic and therefore, not soluble in water. By consequence, it is not possible to measure the pH value.

Melting point/freezing point:

-38 °C

Boiling Point:

211 °C (1 013 hPa)

Flash Point:

80 °C / 176 °F (Closed cup according to method Afnor T 60103.)

Flammability:

Not applicable.

Flammability Limit - Upper (%):

No data available.

Flammability Limit - Lower (%):	No data available.
Vapor pressure:	0,332 hPa (23 °C)
Relative vapor density:	12,8
Evaporation Rate:	No data available.
Density:	Approximate 0,96 kg/dm ³ (20 °C)
Solubility(ies):	
Solubility in Water:	0,017 mg/l (23 °C,)
Solubility (other):	Common organic solvents.: Miscible (in all proportions).
Partition coefficient (n-octanol/water):	Log Kow: 8,02 (25 °C, OECD 123)
Self Ignition Temperature:	372 °C (1 013 hPa)
Decomposition Temperature:	No data available.
Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Particle characteristics:	Not applicable.

9.2 Other information:

Molecular weight:	370,5 g/mol (C ₁₀ H ₃₀ O ₅ Si ₅)
Dynamic viscosity:	3,5 mPa.s (25 °C)
Explosive properties:	The molecule has no chemical groups that are associated with explosive properties.
Oxidizing properties:	Not considered as oxidizing. (evaluation by structure-activity relationship)

SECTION 10: Stability and reactivity

10.1 Reactivity:

No other information noted.

10.2 Chemical Stability:

Stable

10.3 Possibility of hazardous reactions:

Will not occur.

10.4 Conditions to avoid:

No other information noted.

10.5 Incompatible Materials:

Strong oxidizing agents.

10.6 Hazardous Decomposition Products:

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapors. Amorphous silica.

SECTION 11: Toxicological information

Information on likely routes of exposure:

Inhalation:

No effects expected.

Ingestion:

No effects expected.

Skin contact:

No effects expected.

Eye contact:

No effects expected.

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

Acute toxicity:

Oral:

Not classified for acute toxicity based on available data.

Dermal:

Not classified for acute toxicity based on available data.

Inhalation:

Not classified for acute toxicity based on available data.

Repeated dose toxicity:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

NOAEL: 1 000 mg/kg ; (Rat ; Female, Male ; Oral) ; Method: OECD 408 ; Subchronic exposure.

NOAEL: 2,42 mg/l ; (Rat ; Female, Male ; Inhalation - vapour) ; Method: OECD 453 ; Chronic exposure.

NOAEL: 1 600 mg/kg ; (Rat ; Female, Male ; Dermal) ; Method: OECD 410 ; Subacute exposure

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

NOAEL: 1 000 mg/kg ; (Rat ; Female, Male ; Oral) ; Method: OECD 422 ; Subacute exposure

NOAEL: 0,0182 mg/l ; (Rat ; Female, Male ; Inhalation - vapour) ; Method: OECD 413 ; Subchronic exposure.

Skin Corrosion/Irritation:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Not irritating (Rabbit) ; Method: OECD 404

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

Not irritating (Rabbit) ; Method: OECD 404

Serious Eye Damage/Eye Irritation:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Not irritating (Rabbit) ; Method: OECD 405

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

Not irritating (Rabbit) ; Method: OECD 405

Respiratory or Skin Sensitization:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Skin sensitization: Not a skin sensitizer. (Mouse) ; Method: OECD 429

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

Skin sensitization: Not a skin sensitizer. (Guinea Pig) ; Method: OECD 406

Germ Cell Mutagenicity:

In vitro: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Bacterial reverse mutation test: No mutagenic components identified. (Salmonella typhimurium and Escherichia coli ; with and without metabolic activation) ; Method: OECD 471

In vitro gene mutations test on mammalian cells: No mutagenic components identified. (Mouse lymphoma cells ; with and without metabolic activation) ; Method: OECD 476

Chromosomal aberration: No clastogenic effect. (Chinese hamster lung cells ; with and without metabolic activation) ; Method: OECD 473

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

Bacterial reverse mutation test: No mutagenic effect. (Salmonella typhimurium and Escherichia coli ; with and without metabolic activation) ; Method: OECD 471

In vitro gene mutations test on mammalian cells: No mutagenic effect. (Mouse lymphoma cells ; with and without metabolic activation) ; Method: OECD 476

In vivo: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Mammalian erythrocyte micronucleus test: negative (Rat ; Female, Male ; Inhalation) ; Method: OECD 474

Unscheduled DNA Synthesis (UDS) Test with mammalian liver cells in vivo: negative (Rat ; Female, Male ; Inhalation) ; Method: OECD 486

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

Mammalian erythrocyte micronucleus test: No mutagenic effect. (Mouse ; Intraperitoneal) ; Method: OECD 474

Carcinogenicity:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Not classified

NOAEC: $\geq 2,42$ mg/l (Rat ; Female, Male ; Inhalation - vapor) ; Method: Similar to OECD 453 ; Chronic exposure. No carcinogenic effects relevant to humans.

Reproductive toxicity:

Fertility: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Not classified

Fertility study 2 generations: NOAEL (parent): $> 2,496$ mg/l ; NOAEL (F1): $2,496$ mg/l ; NOAEL (F2): None. (Rat ; Female, Male ; Inhalation - vapor) ; Method: OECD 416

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

Not classified

Reproduction/developmental toxicity screening test: NOAEL (parent): $\geq 1\,000$ mg/kg ; NOAEL (F1): $1\,000$ mg/kg ; NOAEL (F2): None. (Rat ; Female, Male ; Gavage (Oral)) ; Method: OECD 422 ; The product is not considered to affect fertility.

Teratogenicity: Based on our knowledge of the composition information:

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

Not classified

NOAEL (terato): $\geq 1\,000$ mg/kg ; NOAEL (mater): $\geq 1\,000$ mg/kg (Rabbit ; Gavage (Oral)) ; Method: OECD 414

NOAEL (terato): $\geq 1\,000$ mg/kg ; NOAEL (mater): $\geq 1\,000$ mg/kg (Rat ; Gavage (Oral)) ; Method: OECD 414

Specific Target Organ Toxicity - Single Exposure:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

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

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

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

Specific Target Organ Toxicity - Repeated Exposure:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

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

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

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

Aspiration Hazard:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

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

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

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

11.2 Information on other hazards:

Endocrine disrupting properties:

No data available.

SECTION 12: Ecological information

12.1 Toxicity:

Acute toxicity:

Fish: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

LC 50 (Oncorhynchus mykiss; 96 h ; Flow through) : > 0,016 mg/l ; Method: OECD 204

NOEC (Oncorhynchus mykiss; 96 h ; Flow through) : >= 0,016 mg/l ; Method: OECD 204

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

LC 50 (Oncorhynchus mykiss; 96 h ; Flow through) : > 0,016 mg/l ; Method: OECD 204 ; No toxicity at the limit of solubility

Aquatic Invertebrates: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

EC 50 (Water flea (Daphnia magna); 48 h ; Flow through) : > 0,0029 mg/l ; Method: OECD 202

NOEC (Water flea (Daphnia magna); 48 h ; Flow through) : >= 0,0029 mg/l ; Method: OECD 202

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

EC 50 (Water flea (Daphnia magna); 48 h ; Flow through) : > 0,0029 mg/l ; Method: OECD 202 ; No toxicity at the limit of solubility

Aquatic plants: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

EC 50 (Algae (Pseudokirchneriella subcapitata); 96 h ; Static) : > 0,012 mg/l ; Method: OECD 201

NOEC (Algae (Pseudokirchneriella subcapitata); 96 h ; Static) : >= 0,012 mg/l ; Method: OECD 201

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

NOEC (growth rate) (Algae (Pseudokirchneriella subcapitata); 72 h ; Static) : >= 0,002 mg/l ; Method: OECD

201 ; No toxicity at the limit of solubility

ErC50 (Algae (*Pseudokirchneriella subcapitata*); 72 h ; Static) : > 0,002 mg/l ; Method: OECD 201 ; No toxicity at the limit of solubility

Toxicity to microorganisms: No data available.

Chronic Toxicity:

Fish: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

NOEC (*Oncorhynchus mykiss*; 90 d ; Flow through) : >= 0,014 mg/l ; Method: OECD 210

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

NOEC (*Oncorhynchus mykiss*; 90 d ; Flow through) : >= 0,014 mg/l ; Method: OECD 210 ; No toxicity at the limit of solubility

Aquatic Invertebrates: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

NOEC (Water flea (*Daphnia magna*); 21 d ; semi-static) : >= 0,015 mg/l ; Method: OECD 211

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

NOEC (Water flea (*Daphnia magna*); 21 d ; semi-static) : >= 0,0046 mg/l ; Method: OECD 211 ; No toxicity at the limit of solubility

12.2 Persistence and Degradability:

Biodegradation: Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

0,14 % (28 d) ; The product is not readily biodegradable.

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

4,5 % (activated sludge, domestic, non-adapted ; 28 d) ; Method: OECD 310 ; The product is not readily biodegradable.

BOD/COD Ratio: No data available.

12.3 Bioaccumulative potential:

Bioconcentration Factor (BCF): Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Bioconcentration Factor (BCF): 16 200 (*Pimephales promelas*) ; Method: OECD 305 ; The product is not bioaccumulating.

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):

Bioconcentration Factor (BCF): 2 860 (*Fathead Minnow* ; 49 d) ; Method: OECD 305 ; Has the potential to bioaccumulate.

Partition coefficient (n-octanol/water):

Log Kow: 8,02 (25 °C) ; Method: OECD 123

12.4 Mobility in soil:

No data available.

12.5 Results of PBT and vPvB assessment:

Based on our knowledge of the composition information:

DECAMETHYLCYCLOPENTASILOXANE (541-02-6):

Meets vPvB criteria (REACH (1907/2006) Ax XIII)

DODECAMETHYLCYCLOHEXASILOXANE (540-97-6):
Meets vPvB criteria (REACH (1907/2006) Ax XIII)

12.6 Endocrine disrupting properties:

No data available.

12.7 Other adverse effects:

No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods:

The user's attention is drawn to the possible existence of local regulations regarding disposal.

Disposal methods:

Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Incinerate.

Contaminated Packaging:

Contaminated packages should be as empty as possible. Dispose of waste at an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. Recycle following cleaning or dispose of at an authorised site.

Waste code:

Unused product: 07 02 17

SECTION 14: Transport information

ADR

Not regulated.

ADN

Not regulated.

RID

Not regulated.

IMDG / IMO

Not regulated.

IATA

Not regulated.

SECTION 15: Regulatory information

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

EU Regulations:

Regulation 1005/2009/EC on substances that deplete the ozone layer, Annex I, Controlled Substances:
None present or none present in regulated quantities.

Regulation 1005/2009/EC on substances that deplete the ozone layer, Annex II, New Substances: None present or none present in regulated quantities.

EU. Regulation 2019/1021/EU on persistent organic pollutants (POPs) (recast), as amended: None present or none present in regulated quantities.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended: None present or none present in regulated quantities.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended: None present or none present in regulated quantities.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended: None present or none present in regulated quantities.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended: None present or none present in regulated quantities.

EU. Directive 2010/75/EU on Industrial Emissions (IPPC), Annex II, L 334/17: None present or none present in regulated quantities.

EU. REACH Annex XIV, Substances Subject to Authorization: None present or none present in regulated quantities.

EU. REACH Candidate List of Substances of Very High Concern for Authorization (SVHC):

Chemical name	CAS-No.	Concentration	Additional Information:
Decamethylcyclopentasiloxane	541-02-6	90 - 100%	very Persistent and very Bioaccumulative (vPvB)
Dodecamethylcyclohexasiloxane	540-97-6	0,1 - 1,0%	very Persistent and very Bioaccumulative (vPvB)

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use:

Chemical name	CAS-No.	Entry No:	Concentration:
Decamethylcyclopentasiloxane	541-02-6	70	90 - 100%

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work: None present or none present in regulated quantities.

EU. Regulation No. 166/2006 PRTR (Pollutant Release and Transfer Registry), Annex II: Pollutants: None present or none present in regulated quantities.

EU. Directive 2012/18/EU (SEVESO III) on major accident hazards involving dangerous substances, Annex I: Not applicable.

15.2 Chemical safety assessment:

Chemical Safety Assessment has been carried out.

Inventory Status:

Australia AICS:	On or in compliance with the inventory.
Canada DSL Inventory List:	On or in compliance with the inventory.
EINECS, ELINCS or NLP:	On or in compliance with the inventory.
Japan (ENCS) List:	On or in compliance with the inventory.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory.

Philippines PICCS:

US TSCA Inventory:

New Zealand Inventory of Chemicals:

Taiwan Chemical Substance Inventory:

On or in compliance with the inventory.

On or in compliance with the inventory.

On or in compliance with the inventory.

On or in compliance with the inventory.

SECTION 16: Other information

Revision Information:

Not relevant.

Abbreviations and acronyms:

CLP: Regulation No. 1272/2008.

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

NOAEL - No Observable Adverse Effect Level

LOAEL - Lowest Observable Adverse Effect Level

ED: Endocrine Disruptor

SVHC: Listed on the Candidate List of substances of very high concern (SVHC)

Issue Date: 06.10.2021

Disclaimer:

The information given is based on data available for the material, the components of the material, and similar materials. The information is believed to be correct. It is given in good faith. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

Annex to the extended Safety Data Sheet (eSDS)

Content

Exposure Scenario 1)	Monomer
Exposure Scenario 2)	Use as an intermediate
Exposure Scenario 3)	Use in Electronics manufacture
Exposure Scenario 4)	Use in Textiles industry
Exposure Scenario 5)	Formulation of Personal care products and Household care products
Exposure Scenario 6)	Use of Personal care products
Exposure Scenario 7)	Use of Household care products (in industrial settings)
Exposure Scenario 8)	Professional and Consumer use in Washing and Cleaning products
Exposure Scenario 9)	Professional and Consumer use in Polishes and Waxes
Exposure Scenario 10)	Use in Dry Cleaning
Exposure Scenario 11)	Laboratory use

Exposure Scenario 1)

Exposure scenario worker

1. Monomer

List of use descriptors	
Life Cycle Stage / Sector(s) of use:	IS: Use at industrial sites SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Product categories [PC]::	PC19: Intermediate (precursor)
Name of contributing environmental scenario and corresponding ERC:	<u>Monomer:</u> ERC6a: Use of intermediate ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

--	--

Contributing Scenarios:	<u>Monomer:</u> PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
--------------------------------	---

2.1. Contributing exposure scenario controlling environmental exposure for: Monomer

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity:	
Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

Annual amount per site:	1000 t
Daily amount per site:	10 t

Frequency and duration of use

Batch process:	not relevant
Continuous process:	100 Emission days per year

Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	not relevant
Local freshwater dilution factor:	40
Local marine water dilution factor:	not relevant
Type of sewage treatment plant (STP):	Onsite Sewage Treatment Plant. Municipal Sewage Treatment Plant.

Other given operational conditions affecting environmental exposure

Type	Emission days	Emission factors	Remarks
------	---------------	------------------	---------

		Air	Soil	Water	
Continuous release	100	0,05 %	-	0,005 %	

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air:	Exhaust air scrubber. Condensation.
Soil:	not relevant
Water:	Ensure all waste water is collected and treated via a WWTP. Before discharge into sewage plants the product normally needs to be neutralised. Control of pH value.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Type:	industrial
Discharge rate:	10 000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Sewage sludge incineration. Recover sludge.
Measures to limit air emissions:	not relevant
Remarks:	Before discharge into sewage plants the product normally needs to be neutralised. Control of pH value.

Type:	municipal
Discharge rate:	10 000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Measures to limit air emissions:	not relevant
Remarks:	See section 13 of the safety data sheet.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Incineration, disposal or recycling at specific offsite provider. External treatment and disposal of waste		See section 13 of the safety data sheet.

should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Monomer

Process Categories:	PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
----------------------------	--

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Amounts used

Annual amount per site:	1000 t
Daily amount per site:	10 t

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks:
Exposure time:	<= 1 h	1 Exposure time per day	PROC1, PROC3
Exposure time:	<= 15 min	1 Exposure time per day	PROC8b
Hours per shift:	8 h		PROC9

Human factors not influenced by risk management

Exposed skin areas:

Palm of one hand:	240 cm ² - PROC1, PROC3
Palm of both hands:	480 cm ² - PROC8b, PROC9

Body weight:	70 kg
--------------	-------

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet
--

Technical conditions and measures to control dispersion from source towards the worker

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	without local exhaust ventilation		PROC1
Inhalation	with local exhaust ventilation	90 %	PROC3, PROC9
Inhalation	with local exhaust ventilation	97 %	PROC8b

Organisational measures to prevent/limit releases, dispersion and exposure

Route of Exposure	Protective Measures	Remarks
Worker - all relevant routes	Take care for general good hygiene and housekeeping.	All relevant Process Categories (PROC)

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

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	Work in well-ventilated zones or use proper respiratory protection.		All relevant Process Categories (PROC)
Worker - all relevant routes	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories (PROC)

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation and reference to its source

Environment:

Monomer:

ERC6a, ERC6c:

Compartment	PEC	RCR	Method	Remarks
freshwater	0,000106 mg/l	< 0,0885	EUSES v2.1	none
marine water	0,000118 mg/l	< 3,46	EUSES v2.1	Risk from environmental exposure is driven by marine water. Ensure all waste water is collected and treated via a WWTP.

Sewage treatment plant	0,00233 mg/l	< 0,000117	EUSES v2.1	none
------------------------	--------------	---------------	------------	------

Health:

Monomer:

PROC1:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,03 mg/m ³	< 0,000074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,34 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,000074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,03 mg/m ³	0,000297	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC3:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,91 mg/m ³	< 0,0022	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,034 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0022	ECETOC TRA worker	Estimated workplace exposures are not

				v2.0	expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,91 mg/m ³	0,009	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,01 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC8b:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,22 mg/m ³	< 0,00054	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,00054	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,22 mg/m ³	0,0022	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC9:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		7,6 mg/m ³	< 0,019	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed

					DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,019	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		7,6 mg/m ³	0,075	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 2)

Exposure scenario worker

1. Use as an intermediate

List of use descriptors	
Life Cycle Stage / Sector(s) of use:	IS: Use at industrial sites SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Product categories [PC]::	PC19: Intermediate (precursor)
Name of contributing environmental scenario and corresponding ERC:	<u>Use as an intermediate:</u> ERC6a: Use of intermediate

Contributing Scenarios:	<u>Use as an intermediate:</u> PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
--------------------------------	--

2.1. Contributing exposure scenario controlling environmental exposure for: Use as an intermediate

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity:	
Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

Annual amount per site:	1000 t
Daily amount per site:	10 t

Frequency and duration of use

Batch process:	not relevant
Continuous process:	100 Emission days per year

Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	not relevant
Local freshwater dilution factor:	40
Local marine water dilution factor:	not relevant
Type of sewage treatment plant (STP):	Onsite Sewage Treatment Plant. Municipal Sewage Treatment Plant.

Other given operational conditions affecting environmental exposure

Type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	100	0,05 %	-	0,005 %	

Other relevant operational conditions: not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air:	Exhaust air scrubber. Condensation.
Soil:	not relevant
Water:	Ensure all waste water is collected and treated via a WWTP. Before discharge into sewage plants the product normally needs to be neutralised. Control of pH value.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Type:	industrial
Discharge rate:	10 000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Recover sludge. Sewage sludge incineration.
Measures to limit air emissions:	not relevant
Remarks:	Before discharge into sewage plants the product normally needs to be neutralised. Control of pH value.

Type:	municipal
Discharge rate:	10 000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Measures to limit air emissions:	not relevant
Remarks:	See section 13 of the safety data sheet.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
---------------------------------	--------------------------------	----------------

Incineration, disposal or recycling at specific offsite provider. External treatment and disposal of waste should comply with applicable local and/or national regulations.		See section 13 of the safety data sheet.
---	--	--

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use as an intermediate

Process Categories:	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
----------------------------	--

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Amounts used

Annual amount per site:	1000 t
Daily amount per site:	10 t

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks:
Exposure time:	<= 1 h	1 Exposure time per day	PROC1, PROC2, PROC3, PROC4
Exposure time:	<= 15 min	1 Exposure time per day	PROC8b
Hours per shift:	8 h		PROC9

Human factors not influenced by risk management

Exposed skin areas:

Palm of one hand:	240 cm ² - PROC1, PROC3
-------------------	------------------------------------

Palm of both hands:	480 cm ² - PROC2, PROC4, PROC8b, PROC9
---------------------	---

Body weight:	70 kg
--------------	-------

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release
--

See chapter 7 of the safety data sheet
--

Technical conditions and measures to control dispersion from source towards the worker
--

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	without local exhaust ventilation		PROC1
Inhalation	with local exhaust ventilation	90 %	PROC2, PROC3, PROC4, PROC9
Inhalation	with local exhaust ventilation	97 %	PROC8b

Organisational measures to prevent/limit releases, dispersion and exposure
--

Route of Exposure	Protective Measures	Remarks
Worker - all relevant routes	Take care for general good hygiene and housekeeping.	All relevant Process Categories (PROC)

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

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	Work in well-ventilated zones or use proper respiratory protection.		All relevant Process Categories (PROC)
Worker - all relevant routes	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories (PROC)

Additional good practice advice beyond the REACH CSA
--

This information is not available.

3. Exposure estimation and reference to its source
--

Environment:

Use as an intermediate:

ERC6a:

Compartment	PEC	RCR	Method	Remarks
-------------	-----	-----	--------	---------

freshwater	0,000106 mg/l	< 0,0885	EUSES v2.1	none
marine water	0,000118 mg/l	< 3,46	EUSES v2.1	Risk from environmental exposure is driven by marine water. Ensure all waste water is collected and treated via a WWTP.
Sewage treatment plant	0,00233 mg/l	< 0,000117	EUSES v2.1	none

Health:

Use as an intermediate:

PROC1:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,03 mg/m ³	< 0,000074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,34 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,000074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,03 mg/m ³	0,000297	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC2:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,03 mg/m ³	< 0,000074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-		0,14	not	Qualitative	Estimated workplace

term - systemic		mg/kg bw/day	relevant	approach used to conclude safe use.	exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,000074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,03 mg/m ³	0,000297	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long- term - local		0,02 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC3:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,91 mg/m ³	< 0,0022	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long- term - systemic		0,034 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0022	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,91 mg/m ³	0,009	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long- term - local		0,01 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC4:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		1,5 mg/m ³	< 0,0037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		1,5 mg/m ³	0,015	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC8b:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,22 mg/m ³	< 0,00054	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,00054	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative,		0,22	0,0022	ECETOC	Estimated workplace

long-term - local		mg/m ³		TRA worker v2.0	exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC9:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		7,6 mg/m ³	< 0,019	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,019	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		7,6 mg/m ³	0,075	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 3)

Exposure scenario worker

1. Use in Electronics manufacture

List of use descriptors

Life Cycle Stage / Sector(s) of use:	IS: Use at industrial sites SU16: Manufacture of computer, electronic and optical products, electrical equipment
Product categories [PC]::	PC1: Adhesives, sealants

Name of contributing environmental scenario and corresponding ERC:

Use in Electronics manufacture:
ERC5: Industrial use resulting in inclusion into or onto a matrix

Contributing Scenarios:

Use in Electronics manufacture:

PROC7: Industrial spraying

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

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

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring.

PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

2.1. Contributing exposure scenario controlling environmental exposure for: Use in Electronics manufacture

No exposure assessment presented for the environment. The environmental release is considered negligible.

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 5 %.
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity:

Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

This information is not available.

Frequency and duration of use

Batch process:	not relevant
Continuous process:	not relevant

Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	not relevant
Local freshwater dilution factor:	not relevant
Local marine water dilution factor:	not relevant

Other given operational conditions affecting environmental exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air:	not relevant
Soil:	not relevant
Water:	not relevant
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Type:	not relevant
Discharge rate:	not relevant
Treatment effectiveness:	not relevant
Sludge treatment technique:	not relevant
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		See section 13 of the safety data sheet.

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use in Electronics manufacture

Process Categories:

PROC7: Industrial spraying
 PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
 PROC10: Roller application or brushing
 PROC13: Treatment of articles by dipping and pouring.
 PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation

Product characteristics

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 5 %.

Physical form of the product:

Liquid

Vapour pressure:

33 Pa

Process temperature:

25 °C

Remarks:

not relevant

Amounts used

This information is not available.

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks:
Hours per shift:	8 h	1 use(s) per day	PROC8b, PROC9, PROC10, PROC13, PROC14

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands:

480 cm² - PROC8b, PROC9, PROC13, PROC14

Both hands:

960 cm² - PROC10

Body weight:

70 kg

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Route of Exposure	Protective Measures	Effectiveness	Remarks
Worker - all relevant routes	Automated process with (semi) closed systems		PROC7

Organisational measures to prevent/limit releases, dispersion and exposure

This information is not available.

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

See chapter 8 of the safety data sheet (Personal protection equipment)

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation and reference to its source

Environment:

none

Health:

Use in Electronics manufacture:

PROC7:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
			not relevant		No exposure assessment presented for human health. Automated process with (semi) closed systems

PROC8b:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,45 mg/m ³	< 0,0011	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,035 mg/kg	not relevant	Qualitative approach	Estimated workplace exposures are not

		bw/day		used to conclude safe use.	expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0011	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,45 mg/m ³	0,0045	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,005 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC9:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		1,5 mg/m ³	< 0,0037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,035 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		1,5 mg/m ³	0,015	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,005 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC10:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		3 mg/m ³	< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,07 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		3 mg/m ³	0,03	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,005 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC13:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		3 mg/m ³	< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,035 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		3 mg/m ³	0,03	ECETOC TRA worker	Estimated workplace exposures are not

				v2.0	expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,005 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC14:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		1,5 mg/m ³	< 0,0037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,017 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		1,5 mg/m ³	0,015	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,0025 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 4)

Exposure scenario worker

1. Use in Textiles industry

List of use descriptors

Life Cycle Stage / Sector(s) of use:

IS: Use at industrial sites

F: Formulation or re-packaging

PW: Widespread use by professional workers

C: Consumer use

SU5: Manufacture of textiles, leather, fur

Product categories [PC]::

PC34: Textile dyes and impregnating products

Name of contributing environmental scenario and corresponding ERC:

Use in Textiles industry:

ERC2: Formulation into mixture (mixtures)

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

ERC6b: Industrial use of reactive processing aids

ERC8a: Wide dispersive indoor use of processing aids in open systems

ERC8b: Wide dispersive indoor use of reactive substances in open systems

Contributing Scenarios:

Use in Textiles industry:

PROC5: Mixing or blending in batch processes

PROC7: Industrial spraying

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

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

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring.

2.1. Contributing exposure scenario controlling environmental exposure for: Use in Textiles industry

No exposure assessment presented for the environment. The environmental release is considered negligible.

Product characteristics

Concentration of the substance in a mixture:

Covers percentage substance in the product up to 5 %.

Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity:	
Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

This information is not available.

Frequency and duration of use

Batch process:	not relevant
Continuous process:	not relevant

Environment factors not influenced by risk management

Flow rate of receiving surface water (m ³ /d):	not relevant
Local freshwater dilution factor:	not relevant
Local marine water dilution factor:	not relevant

Other given operational conditions affecting environmental exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air:	not relevant
Soil:	not relevant
Water:	not relevant
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Type:	not relevant
Discharge rate:	not relevant
Treatment effectiveness:	not relevant

Sludge treatment technique:	not relevant
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
External treatment and disposal of waste should comply with applicable local and/or national regulations.		See section 13 of the safety data sheet.

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use in Textiles industry

Process Categories:	PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring.
---------------------	---

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 5 %.
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Amounts used

This information is not available.

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks:
Hours per shift:	8 h	1 use(s) per day	PROC7, PROC10, PROC13
Exposure time:	<= 1 h	1 Exposure time per year	PROC5, PROC8b, PROC9

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands:	480 cm ² - PROC5, PROC8b, PROC9, PROC13
---------------------	--

Both hands:	960 cm ² - PROC10
-------------	------------------------------

Hands and forearms:	1500 cm ² - PROC7
---------------------	------------------------------

Body weight:	70 kg
--------------	-------

Other given operational conditions affecting workers exposure

Area of use	Room size	Temperature	Ventilation rate	Remarks
Indoor use	< 100. m3			

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	with local exhaust ventilation	>= 70 %	PROC7

Organisational measures to prevent/limit releases, dispersion and exposure

This information is not available.

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

See chapter 8 of the safety data sheet (Personal protection equipment)

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation and reference to its source

Environment:

none

Health:

Use in Textiles industry:

PROC5:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		3 mg/m ³	< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		3 mg/m ³	0,03	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC7:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		31,3 mg/m ³	< 0,077	StoffenManager (inhalation exposure)	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic			not relevant		Not relevant.
Worker - combined, long-term - systemic			not relevant		Not relevant.
Worker - inhalative, long-term - local		31,3 mg/m ³	0,31	StoffenManager (inhalation exposure)	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local			not relevant		Not relevant.

ERC8b:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		3 mg/m ³	< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,34 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		3 mg/m ³	0,03	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,05 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC9:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		3 mg/m ³	< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,34 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		3 mg/m ³	0,03	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed

					DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,05 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC10:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		30 mg/m ³	< 0,074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		1,4 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		30 mg/m ³	0,3	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC13:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		30 mg/m ³	< 0,074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe	Estimated workplace exposures are not expected to exceed DNELs when the identified

				use.	risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0074	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		30 mg/m ³	0,3	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	0	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 5)

Exposure scenario worker

1. Formulation of Personal care products and Household care products

List of use descriptors	
Life Cycle Stage / Sector(s) of use:	IS: Use at industrial sites F: Formulation or re-packaging
Product categories [PC]::	PC31: Polishes and wax blends PC35: Washing and cleaning products PC39: Cosmetics, personal care products
Name of contributing environmental scenario and corresponding ERC:	<u>Formulation of Personal care products and Household care products:</u> ERC2: Formulation into mixture (mixtures)
Contributing Scenarios:	<u>Formulation of Personal care products and Household care products:</u> PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure

	PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
--	---

2.1. Contributing exposure scenario controlling environmental exposure for: Formulation of Personal care products and Household care products

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity:	
Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

Annual amount per site:	500 t
Daily amount per site:	2000 kg

Frequency and duration of use

Batch process:	not relevant
Continuous process:	300 Emission days per year

Environment factors not influenced by risk management

Flow rate of receiving surface water (m ³ /d):	not relevant
Local freshwater dilution factor:	10
Local marine water dilution factor:	not relevant

Type of sewage treatment plant (STP):	Municipal Sewage Treatment Plant.
---------------------------------------	-----------------------------------

Other given operational conditions affecting environmental exposure

Type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	300	0,02 %	-	0,09 %	

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air:	not relevant
Soil:	not relevant
Water:	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Type:	municipal
Discharge rate:	2 000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Measures to limit air emissions:	not relevant
Remarks:	See section 13 of the safety data sheet.

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Incineration, disposal or recycling at specific offsite provider. External treatment and disposal of waste should comply with applicable local and/or national regulations.		See section 13 of the safety data sheet.

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Formulation of Personal care products and Household care products

Process Categories:	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
----------------------------	---

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Amounts used

Annual amount per site:	500 t
Daily amount per site:	2000 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks:
Exposure time:	<= 1 h	1 Exposure time per day	PROC5
Hours per shift:	8 h		PROC8a, PROC8b, PROC9

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands:	480 cm ² - PROC5, PROC8b, PROC9
----------------------------	--

Both hands:	960 cm ² - PROC8a
--------------------	------------------------------

Body weight:	70 kg
--------------	-------

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	without local exhaust ventilation		PROC1
Inhalation	with local exhaust ventilation	90 %	PROC5, PROC8a, PROC9
Inhalation	with local exhaust ventilation	97 %	PROC8b

Organisational measures to prevent/limit releases, dispersion and exposure

Route of Exposure	Protective Measures	Remarks
Worker - all relevant routes	Take care for general good hygiene and housekeeping.	All relevant Process Categories (PROC)

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

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	Work in well-ventilated zones or use proper respiratory protection.		All relevant Process Categories (PROC)
Worker - all relevant routes	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories (PROC)

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation and reference to its source

Environment:

Formulation of Personal care products and Household care products:

ERC2:

Compartment	PEC	RCR	Method	Remarks
freshwater	0,000631 mg/l	< 0,526	EUSES v2.1	none
marine water	0,00123 mg/l	< 10,3	EUSES v2.1	Risk from environmental exposure is driven by marine water. Ensure all waste water is collected and treated via a WWTP.

Sewage treatment plant	0,007 mg/l	< 0,00035	EUSES v2.1	none
------------------------	------------	-----------	------------	------

Health:

Formulation of Personal care products and Household care products:

PROC5:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,15 mg/m ³	< 0,00037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,07 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,00037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,15 mg/m ³	0,0015	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,01 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC8a:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		15 mg/m ³	< 0,037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,14 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed

					DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		15 mg/m ³	0,15	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,01 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC8b:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		2,3 mg/m ³	< 0,0054	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0054	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		2,3 mg/m ³	0,022	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC9:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		1,5 mg/m ³	< 0,0037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified

					risk management measures are adopted.
Worker - dermal, long-term - systemic		0,69 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,0037	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		1,5 mg/m ³	0,015	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,1 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 6)

Exposure scenario consumer

1. Use of Personal care products

List of use descriptors	
Life Cycle Stage / Sector(s) of use:	PW: Widespread use by professional workers C: Consumer use
Product categories [PC]::	PC39: Cosmetics, personal care products
Name of contributing environmental scenario and corresponding ERC:	<u>Use of Personal care products:</u> ERC8a: Wide dispersive indoor use of processing aids in open systems
Contributing Scenarios:	<u>Use of Personal care products:</u> PROC10: Roller application or brushing

	PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available
--	--

2.1. Contributing exposure scenario controlling environmental exposure for: Use of Personal care products

Product characteristics

Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity

Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

This information is not available.

Frequency and duration of use

Batch process:	not relevant
Continuous process:	365 Emission days per year

Environment factors not influenced by risk management

Flow rate of receiving surface water (m ³ /d):	not relevant
Local freshwater dilution factor:	10
Local marine water dilution factor:	not relevant
Type of sewage treatment plant (STP):	Municipal Sewage Treatment Plant.

Other given operational conditions affecting environmental exposure

Type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	365	90 %	-	10 %	

Other relevant operational conditions: not relevant

Risk management measures (RMM)

Conditions and measures related to municipal sewage treatment plant

Type:	municipal
Discharge rate:	2 000 m ³ /d

Treatment effectiveness:	not relevant
Sludge treatment technique:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Incineration, disposal or recycling at specific offsite provider. External recovery and recycling of waste should comply with applicable local and/or national regulations.		

Conditions and measures related to external recovery of waste

none

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling consumer exposure for: Use of Personal care products

No exposure assessment presented for human health. Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation.

Product Categories: PC39: Cosmetics, personal care products

Product characteristics

Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant
Application:	not relevant

Amounts used

This information is not available.

Frequency and duration of use

Human factors not influenced by risk management

This information is not available.

Other given operational conditions affecting consumers exposure

Other relevant operational conditions: not relevant

Risk management measures (RMM)

Conditions and measures related to information and behavioural advice to consumers

This information is not available.

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

See chapter 8 of the safety data sheet (Personal protection equipment)

Additional good practice advice beyond the REACH CSA

not relevant

3. Exposure estimation and reference to its source

Environment:

Use of Personal care products:

ERC8a:

Compartment	PEC	RCR	Method	Remarks
freshwater	0,000257 mg/l	< 0,214	EUSES v2.1	No specific risk management measure identified beyond those operational conditions stated.
marine water	0,0000255 mg/l	< 0,213	EUSES v2.1	No specific risk management measure identified beyond those operational conditions stated.
Sewage treatment plant	0,00243 mg/l	< 0,00015	EUSES v2.1	No specific risk management measure identified beyond those operational conditions stated.
Indirect exposure to humans via the environment	0,00305 mg/kg bw/day	0,00012	EUSES v2.1	No specific risk management measure identified beyond those operational conditions stated.

Health:

none

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

This information is not available.

Exposure Scenario 7)

Exposure scenario worker

1. Use of Household care products (in industrial settings)

List of use descriptors

Life Cycle Stage / Sector(s) of use:	IS: Use at industrial sites
Product categories [PC]::	PC31: Polishes and wax blends PC35: Washing and cleaning products

Name of contributing environmental scenario and corresponding ERC:	<u>Use of Household care products (in industrial settings):</u> ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
---	--

Contributing Scenarios:	<u>Use of Household care products (in industrial settings):</u> PROC7: Industrial spraying PROC10: Roller application or brushing PROC19: Hand-mixing with intimate contact and only PPE available
--------------------------------	---

2.1. Contributing exposure scenario controlling environmental exposure for: Use of Household care products (in industrial settings)

No exposure assessment presented for the environment. The environmental release is considered negligible.

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 10%.
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity:	
Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

This information is not available.

Frequency and duration of use

Batch process:	not relevant
Continuous process:	not relevant

Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	not relevant
Local freshwater dilution factor:	not relevant
Local marine water dilution factor:	not relevant

Other given operational conditions affecting environmental exposure

Other relevant operational conditions: not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air:	not relevant
Soil:	not relevant
Water:	not relevant
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Type:	not relevant
Discharge rate:	not relevant
Treatment effectiveness:	not relevant
Sludge treatment technique:	not relevant
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Incineration, disposal or recycling at specific offsite provider. External treatment and disposal of waste should comply with applicable local and/or national regulations.		See section 13 of the safety data sheet.

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use of Household care products (in industrial settings)

Process Categories:	PROC7: Industrial spraying PROC10: Roller application or brushing PROC19: Hand-mixing with intimate contact and only PPE available
----------------------------	--

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 10%.
---	---

Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Amounts used

This information is not available.

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks:
Hours per shift:	8 h	1 use(s) per day	PROC7, PROC10, PROC19

Human factors not influenced by risk management

Exposed skin areas:

Both hands:	960 cm ² - PROC10
--------------------	------------------------------

Hands and forearms:	1500 cm ² - PROC7
----------------------------	------------------------------

Covers skin contact area up to:	1500 cm ² - PROC19
--	-------------------------------

Body weight:	70 kg
---------------------	-------

Other given operational conditions affecting workers exposure

Area of use	Room size	Temperature	Ventilation rate	Remarks
Indoor use, Worst case assumption.				

Other relevant operational conditions:	not relevant
---	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet
--

Technical conditions and measures to control dispersion from source towards the worker

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	without local exhaust ventilation		PROC7, PROC10, PROC19

Organisational measures to prevent/limit releases, dispersion and exposure

Route of Exposure	Protective Measures	Remarks
Worker - all relevant routes	Take care for general good hygiene and housekeeping.	All relevant Process Categories (PROC)

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

See chapter 8 of the safety data sheet (Personal protection equipment)

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation and reference to its source

Environment:

none

Health:

Use of Household care products (in industrial settings):

PROC7:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		86 mg/m ³	< 0,21	StoffenManager (inhalation exposure)	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		4,3 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,21	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		86 mg/m ³	0,85	StoffenManager (inhalation exposure)	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

Worker - dermal, long-term - local		0,2 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
------------------------------------	--	------------------------	--------------	---	--

PROC10:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		91 mg/m ³	< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		2,7 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		91 mg/m ³	0,9	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,2 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC19:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		91 mg/m ³	< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		14,1 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined,			< 0,22	ECETOC	Estimated workplace

long-term - systemic				TRA worker v2.0	exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		91 mg/m ³	0,9	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,5 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 8)

Exposure scenario consumer

1. Professional and Consumer use in Washing and Cleaning products

List of use descriptors	
Life Cycle Stage / Sector(s) of use:	PW: Widespread use by professional workers C: Consumer use
Product categories [PC]::	PC35: Washing and cleaning products
Name of contributing environmental scenario and corresponding ERC:	<u>Professional and Consumer use in Washing and Cleaning products:</u> ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems
Contributing Scenarios:	<u>Professional and Consumer use in Washing and Cleaning products:</u> PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation)

	PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available
--	---

2.1. Contributing exposure scenario controlling environmental exposure for: Professional and Consumer use in Washing and Cleaning products

No exposure assessment presented for the environment. The environmental release is considered negligible.

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 10%.
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity

Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

This information is not available.

Frequency and duration of use

Batch process:	not relevant
Continuous process:	not relevant

Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	not relevant
Local freshwater dilution factor:	not relevant
Local marine water dilution factor:	not relevant

Other given operational conditions affecting environmental exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Conditions and measures related to municipal sewage treatment plant

Type:	not relevant
Discharge rate:	not relevant
Treatment effectiveness:	not relevant
Sludge treatment technique:	not relevant
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Incineration, disposal or recycling at specific offsite provider. External treatment and disposal of waste should comply with applicable local and/or national regulations.		

Conditions and measures related to external recovery of waste

none

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling consumer exposure for: Professional and Consumer use in Washing and Cleaning products

Product Categories:	PC35: Washing and cleaning products
---------------------	-------------------------------------

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 10%.
--	---

Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Application:	not relevant
--------------	--------------

Amounts used

This information is not available.

Frequency and duration of use

	Use duration (h/d):	Frequency of use:	Remarks:
Covers exposure up to:	8 h	1 use(s) per day	

Human factors not influenced by risk management

Exposed skin areas:

Professional use, Palm of both hands:	480 cm ² - PROC10
---------------------------------------	------------------------------

Professional use, Hands and forearms:	1500 cm ² - PROC11
---------------------------------------	-------------------------------

Professional use, Covers skin contact area up to:	1980 cm ² - PROC19
---	-------------------------------

Professional use, Body weight:	70 kg
--------------------------------	-------

Consumer use, Covers skin contact area up to:	1900 cm ²
---	----------------------

Consumer use, Body weight:	65 kg
----------------------------	-------

Other given operational conditions affecting consumers exposure

Area of use	Room size	Temperature	Ventilation rate	Remarks
Consumer use	58 m ³		0,5	Liquid cleaners
Consumer use	15 m ³		2,5	Spray cleaners

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Conditions and measures related to information and behavioural advice to consumers

This information is not available.

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

See chapter 8 of the safety data sheet (Personal protection equipment)
--

Additional good practice advice beyond the REACH CSA

not relevant

3. Exposure estimation and reference to its source

Environment:

none

Health:

Professional and Consumer use in Washing and Cleaning products:

PC35:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Consumer - dermal, short-term - systemic	Liquid cleaners	29,2 mg/kg	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - dermal, short-term - systemic	Spray cleaners	0,25 mg/kg	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, short-term - systemic	Liquid cleaners	4,07 mg/m ³	0,19	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, short-term - systemic	Spray cleaners	0,50 mg/m ³	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - dermal, short-term - local	Liquid cleaners	1 mg/cm ²	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, short-term - local	Liquid cleaners	4,07 mg/m ³	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, short-term - local	Spray cleaners	0,5 mg/m ³	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - dermal, long-term - systemic	Liquid cleaners	8,32 mg/kg bw/day	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - dermal, long-term - systemic	Spray cleaners	0,25 mg/kg	not relevant	ConsExpo v4.1	Estimated workplace exposures are not

		bw/day			expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, long-term - systemic	Liquid cleaners	1,16 mg/m ³	< 0,01	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, long-term - systemic	Spray cleaners	0,5 mg/m ³	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - dermal, long-term - local			not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, long-term - local	Liquid cleaners	1,16 mg/m ³	0,06	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, long-term - local	Spray cleaners	0,5 mg/m ³	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC10:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		76 mg/m ³	< 0,19	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		2,7 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

Worker - inhalative, long-term - local		76 mg/m ³	0,75	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,2 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC11:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		86 mg/m ³	< 0,21	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		11 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		86 mg/m ³	0,85	StoffenManager (inhalation exposure)	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,5 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC19:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		76 mg/m ³	< 0,19	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-		14 mg/kg	not	Qualitative	Estimated workplace

term - systemic		bw/day	relevant	approach used to conclude safe use.	exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		76 mg/m ³	0,75	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,5 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 9)

Exposure scenario consumer

1. Professional and Consumer use in Polishes and Waxes

List of use descriptors	
Life Cycle Stage / Sector(s) of use:	PW: Widespread use by professional workers C: Consumer use
Product categories [PC]::	PC31: Polishes and wax blends
Name of contributing environmental scenario and corresponding ERC:	Professional and Consumer use in Polishes and Waxes: ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems
Contributing Scenarios:	Professional and Consumer use in Polishes and Waxes: PROC1: Use in closed process, no likelihood of exposure

	PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available
--	--

2.1. Contributing exposure scenario controlling environmental exposure for: Professional and Consumer use in Polishes and Waxes

No exposure assessment presented for the environment. The environmental release is considered negligible.

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 10%.
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity

Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

This information is not available.

Frequency and duration of use

Batch process:	not relevant
Continuous process:	not relevant

Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	not relevant
Local freshwater dilution factor:	not relevant
Local marine water dilution factor:	not relevant

Other given operational conditions affecting environmental exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Conditions and measures related to municipal sewage treatment plant

Type:	not relevant
Discharge rate:	not relevant
Treatment effectiveness:	not relevant
Sludge treatment technique:	not relevant
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Incineration, disposal or recycling at specific offsite provider. External treatment and disposal of waste should comply with applicable local and/or national regulations.		

Conditions and measures related to external recovery of waste

none

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling consumer exposure for: Professional and Consumer use in Polishes and Waxes

Product Categories:	PC31: Polishes and wax blends
---------------------	-------------------------------

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 10%.
--	---

Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant
Application:	not relevant

Amounts used

This information is not available.

Frequency and duration of use

	Use duration (h/d):	Frequency of use:	Remarks:
Covers exposure up to:	8 h	1 use(s) per day	

Human factors not influenced by risk management

Exposed skin areas:

Professional use, Palm of both hands:	480 cm ² - PROC10
---------------------------------------	------------------------------

Professional use, Hands and forearms:	1500 cm ² - PROC11
---------------------------------------	-------------------------------

Professional use, Covers skin contact area up to:	1980 cm ² - PROC19
---	-------------------------------

Professional use, Body weight:	70 kg
--------------------------------	-------

Consumer use, Covers skin contact area up to:	430 cm ² - Floor polishes
---	--------------------------------------

Consumer use, Body weight:	65 kg
----------------------------	-------

Other given operational conditions affecting consumers exposure

Area of use	Room size	Temperature	Ventilation rate	Remarks
Consumer use	58 m ³		0,5	

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Conditions and measures related to information and behavioural advice to consumers

This information is not available.

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

See chapter 8 of the safety data sheet (Personal protection equipment)

Additional good practice advice beyond the REACH CSA

not relevant

3. Exposure estimation and reference to its source

Environment:

none

Health:

Professional and Consumer use in Polishes and Waxes:

PC31:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Consumer - dermal, short-term - systemic		8,46 mg/kg	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, short-term - systemic		0,936 mg/m ³	0,08	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - dermal, short-term - local		1,28 mg/cm ²	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, short-term - local		0,936 mg/m ³	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - dermal, long-term - systemic		0,0463 mg/kg bw/day	not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, long-term - systemic		0,00512 mg/m ³	< 0,000112	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - dermal, long-term - local			not relevant	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Consumer - inhalative, long-term - local		0,00512 mg/m ³	0,000457	ConsExpo v4.1	Estimated workplace exposures are not expected to exceed DNELs when the identified

					risk management measures are adopted.
--	--	--	--	--	---------------------------------------

PROC10:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		76 mg/m ³	< 0,19	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		2,8 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		76 mg/m ³	0,75	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,2 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC11:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		86 mg/m ³	< 0,21	StoffenManager (inhalation exposure)	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		10,7 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

					measures are adopted.
Worker - inhalative, long-term - local		86 mg/m ³	0,85	StoffenManager (inhalation exposure)	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,5 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC19:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		76 mg/m ³	< 0,19	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		14,1 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - combined, long-term - systemic			< 0,22	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		76 mg/m ³	0,75	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - local		0,5 mg/cm ²	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 10)

Exposure scenario worker

1. Use in Dry Cleaning

List of use descriptors	
Life Cycle Stage / Sector(s) of use:	PW: Widespread use by professional workers
Product categories [PC]::	PC35: Washing and cleaning products
Name of contributing environmental scenario and corresponding ERC:	<u>Use in Dry Cleaning:</u> : None.
Contributing Scenarios:	<u>Use in Dry Cleaning:</u> PROC2: Use in closed, continuous process with occasional controlled exposure PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

2.1. Contributing exposure scenario controlling environmental exposure for: Use in Dry Cleaning

No exposure assessment presented for the environment. The environmental release is considered negligible.

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity:	
Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

This information is not available.

Frequency and duration of use

Batch process:	not relevant
Continuous process:	not relevant

Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	not relevant
Local freshwater dilution factor:	not relevant
Local marine water dilution factor:	not relevant

Other given operational conditions affecting environmental exposure

Other relevant operational conditions:	not relevant
--	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air:	not relevant
Soil:	not relevant
Water:	not relevant
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Type:	not relevant
Discharge rate:	not relevant
Treatment effectiveness:	not relevant
Sludge treatment technique:	not relevant
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Incineration, disposal or recycling at specific offsite provider. External treatment and disposal of waste should comply with applicable local and/or national regulations.		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use in Dry Cleaning

Process Categories:	PROC2: Use in closed, continuous process with occasional controlled exposure PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
----------------------------	--

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
---	---

Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Amounts used

This information is not available.

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks:
Exposure time:	<= 1 h	1 Exposure time per day	PROC5
Hours per shift:	8 h		PROC8a, PROC8b, PROC9

Human factors not influenced by risk management

Exposed skin areas:

Both hands:	960 cm ² - PROC8a
--------------------	------------------------------

Body weight:	70 kg
---------------------	-------

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	not relevant
---	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	without local exhaust ventilation		PROC1
Inhalation	with local exhaust ventilation		PROC2, PROC3, PROC4, PROC7
Inhalation	with local exhaust ventilation	90 %	PROC5, PROC8a, PROC9
Inhalation	with local exhaust ventilation	97 %	PROC8b

Organisational measures to prevent/limit releases, dispersion and exposure

Route of Exposure	Protective Measures	Remarks
Worker - all relevant routes	Take care for general good hygiene and housekeeping.	All relevant Process Categories (PROC)

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

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	Work in well-ventilated zones or use proper respiratory protection.		All relevant Process Categories (PROC)
Worker - all relevant routes	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories (PROC)

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation and reference to its source

Environment:

none

Health:

Use in Dry Cleaning:

PROC2:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		76 mg/m ³	< 0,19	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		76 mg/m ³	0,75	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

PROC8a:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, short-term - systemic		227 mg/m ³	0,88	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 11)

Exposure scenario worker

1. Laboratory use

List of use descriptors	
Life Cycle Stage / Sector(s) of use:	IS: Use at industrial sites SU24: Scientific research and development
Product categories [PC]::	PC21: Laboratory chemicals
Name of contributing environmental scenario and corresponding ERC:	<u>Laboratory use:</u> : None.
Contributing Scenarios:	<u>Laboratory use:</u> PROC15: Use as laboratory reagent

2.1. Contributing exposure scenario controlling environmental exposure for: Laboratory use

No exposure assessment presented for the environment. The environmental release is considered negligible.

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).
Physical form of the product:	Liquid
Vapour pressure:	33 Pa
Process temperature:	25 °C
Remarks:	not relevant

Viscosity:	
Kinematic viscosity:	Approximate 3,7 mm ² /s (25 °C)
Dynamic viscosity:	Approximate 3,5 mPa.s (25 °C)

Amounts used

Daily amount per site:	< 10 g
-------------------------------	--------

Frequency and duration of use

Batch process:	not relevant
Continuous process:	not relevant

Environment factors not influenced by risk management

Flow rate of receiving surface water (m³/d):	not relevant
Local freshwater dilution factor:	not relevant
Local marine water dilution factor:	not relevant

Other given operational conditions affecting environmental exposure

Other relevant operational conditions:	not relevant
---	--------------

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air:	not relevant
Soil:	not relevant
Water:	not relevant
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Type:	not relevant
Discharge rate:	not relevant
Treatment effectiveness:	not relevant
Sludge treatment technique:	not relevant
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Incineration, disposal or recycling at specific offsite provider. External treatment and disposal of waste should comply with applicable local and/or national regulations.		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Laboratory use

Process Categories: PROC15: Use as laboratory reagent

Product characteristics

Concentration of the substance in a mixture: Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product: Liquid
Vapour pressure: 33 Pa
Process temperature: 25 °C
Remarks: not relevant

Amounts used

Daily amount per site: < 10 g

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks:
Exposure time:	<= 15 min	1 Exposure time per day	PROC15

Human factors not influenced by risk management

Exposed skin areas:

Palm of one hand: 240 cm² - PROC15

Body weight: 70 kg

Other given operational conditions affecting workers exposure

Other relevant operational conditions: not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Route of Exposure	Protective Measures	Effectiveness	Remarks
Inhalation	with local exhaust ventilation		PROC15

Organisational measures to prevent/limit releases, dispersion and exposure

Route of Exposure	Protective Measures	Remarks
Worker - all relevant routes	Take care for general good hygiene and housekeeping.	PROC15

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

See chapter 8 of the safety data sheet (Personal protection equipment)

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation and reference to its source

Environment:

none

Health:

Laboratory use:

PROC15:

Route of Exposure	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		0,76 mg/m ³	< 0,0019	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - inhalative, long-term - local		0,76 mg/m ³	0,0075	ECETOC TRA worker v2.0	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-term - systemic		0,034 mg/kg bw/day	not relevant	Qualitative approach used to conclude safe use.	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
Worker - dermal, long-			not	Qualitative	Estimated workplace

term - local			relevant	approach used to conclude safe use.	exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
--------------	--	--	----------	-------------------------------------	--

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

For scaling see <http://echa.europa.eu/guidance-documents/guidance-on-reach> (ECHA Guidance for Downstream Users). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.