SAFETY DATA SHEET

DOW FRANCE S.A.S.

Safety Data Sheet according to Reg. (EU) 2020/878

Product name: DOWSIL™ OS-20 Fluid

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DOW FRANCE S.A.S. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Product name: DOWSIL™ OS-20 Fluid

Chemical name of the substance: Octamethyltrisiloxane
CASRN: 107-51-7
EC-No.: 203-497-4
REACH Registration Number: 01-2119970219-31-0000
01-2119970219-31-0008
01-2119970219-31

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Manufacturing and on-site use. Used for formulation of personal care products. Used for formulation of coatings at downstream industrial sites. Use in coatings. Sealants. Electronics and optical product manufacturing. In situ non-metal surface treatment. Heat transfer fluid use at downstream industrial sites. Professional use of personal care products. Use in laboratories. Uses in cosmetics/personal care products, perfumes and fragrances. Formulation of medical adhesives and pharmaceuticals.
For details on use descriptors and exposure scenarios, please refer to the extended part of the Safety Data Sheet.

1.3 Details of the supplier of the safety data sheet
COMPANY IDENTIFICATION
DOW FRANCE S.A.S.
23 AVENUE JULES RIMET
93210 LA PLAINE SAINT-DENIS
FRANCE

Customer Information Number: (31) 115 67 2626
SDSQuestion@dow.com

1.4 EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 00 33 388 736 000
Local Emergency Contact: 00 33 388 736 000
ORFILA: + 33 (0)1 45 42 59 59

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:
Flammable liquids - Category 3 - H226
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008:

Hazard pictograms

Signal word: WARNING

Hazard statements

H226	Flammable liquid and vapour.

Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P370 + P378	In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents and/or container to an approved waste disposal plant.

2.3 Other hazards

Static-accumulating flammable liquid.
This product contains octamethylcyclotetrasiloxane (D4) that has been identified by the Member State Committee of ECHA as fulfilling the PBT and vPvB criteria laid down in Annex XIII to Regulation (EC) No 1907/2006. See Section 12 for additional information.

Endocrine disrupting properties

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.
Human 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.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

This product is a substance.
Substance name: Octamethyltrisiloxane
CASRN: 107-51-7
EC-No.: 203-497-4

CASRN / EC-No. / Index-No.	REACH Registration Number	Concentration	Component	Classification: REGULATION (EC) No 1272/2008
CASRN 556-67-2 **EC-No.** 209-136-7 **Index-No.** 014-018-00-1	–	>= 0,001 - <= 0,052 %	octamethylcyclotetrasiloxane [D4]	Flam. Liq. 3; H226 Repr. 2; H361f Aquatic Chronic 1; H410 M-Factor (Chronic aquatic toxicity): 10 Acute toxicity estimate Acute oral toxicity: > 4 800 mg/kg Acute inhalation toxicity: 36 mg/l, 4 Hour, dust/mist Acute dermal toxicity: > 2 400 mg/kg
Substances with a workplace exposure limit				
CASRN 107-51-7 **EC-No.** 203-497-4 **Index-No.** –	01-2119970219-31	>= 99,0 - <= 100,0 %	Octamethyltrisiloxane	Flam. Liq. 3; H226 Acute toxicity estimate Acute oral toxicity: > 2 000 mg/kg Acute inhalation toxicity: > 22,6 mg/l, 4 Hour, vapour Acute dermal toxicity: > 2 000 mg/kg

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures
General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air and keep comfortable for breathing; consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

4.2 Most important symptoms and effects, both acute and delayed:
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

4.3 Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Alcohol-resistant foam. Dry chemical. Dry sand.

Unsuitable extinguishing media: High volume water jet. Do not use direct water stream..

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products: Carbon oxides. Silicon oxides.

Unusual Fire and Explosion Hazards: Flash back possible over considerable distance.. Exposure to combustion products may be a hazard to health.. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9.. Flammable mixtures may exist within the vapor space of containers at room temperature.. Closed containers may rupture via pressure build-up when exposed to fire or extreme heat.. Fire burns more vigorously than would be expected.. Vapours may form explosive mixtures with air..

5.3 Advice for firefighters

Fire Fighting Procedures: Use water spray to cool unopened containers.. Evacuate area.. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.. Do not use a solid water stream as it may scatter and spread fire..

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Remove undamaged containers from fire area if it is safe to do so.

Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.. Use personal protective equipment..

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Remove all sources of ignition. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Vapor explosion hazard. Keep out of sewers. Follow safe handling advice and personal protective equipment recommendations.

6.2 Environmental precautions: Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and materials for containment and cleaning up: Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapours/mists with a water spray jet. Clean up remaining materials from spill with suitable absorbant. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container. Dispose of saturated absorbent or cleaning materials appropriately, since spontaneous heating may occur.

6.4 Reference to other sections:
See sections: 7, 8, 11, 12 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling: Keep container tightly closed. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment. Non-sparking tools should be used. Handle in accordance with good industrial hygiene and safety practice. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied.
Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it isnecessary to provide an inert gas purge before beginning transfer operations. Restrict flow velocity in order to reduce the accumulation of static electricity. Ground and bond container and receiving equipment.

7.2 Conditions for safe storage, including any incompatibilities: Keep in properly labelled containers. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Do not store with the following product types: Strong oxidizing agents. Organic peroxides. Flammable solids. Pyrophoric liquids. Pyrophoric solids. Self-heating substances and mixtures. Substances and mixtures, which in contact with water, emit flammable gases. Explosives. Gases.
Unsuitable materials for containers**:** None known.

7.3 Specific end use(s): See the technical data sheet on this product for further information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
octamethylcyclotetrasiloxane [D4]	US WEEL	TWA	10 ppm
Octamethyltrisiloxane	Dow IHG	TWA	20 ppm

Recommended monitoring procedures
Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with the Occupational Exposure Limits and the adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples should be analysed by an accredited laboratory.
Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy); European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents); European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents). Reference to national guidance documents for methods for the determination of hazardous substances will also be required.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods.
Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods.
Health and Safety Executive (HSE), United Kingdom: Methods for the Determination of Hazardous Substances.
Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.
L'Institut National de Recherche et de Securité, (INRS), France.

Derived No Effect Level
octamethylcyclotetrasiloxane [D4]
Workers

Acute systemic effects		*Acute local effects*		*Long-term systemic effects*		*Long-term local effects*	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	73 mg/m3	n.a.	73 mg/m3

Consumers

Acute systemic effects	*Acute local effects*	*Long-term systemic effects*	*Long-term local effects*

Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	13 mg/m3	3,7 mg/kg bw/day	n.a.	13 mg/m3

Octamethyltrisiloxane

Workers

Acute systemic effects		***Acute local effects***		***Long-term systemic effects***		***Long-term local effects***	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
mg/kg bw/day	n.a.	n.a.	n.a.	1103 mg/kg bw/day	78 mg/m3	n.a.	n.a.

Consumers

Acute systemic effects			***Acute local effects***		***Long-term systemic effects***			***Long-term local effects***	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
mg/kg bw/day	n.a.	mg/kg bw/day	n.a.	n.a.	556,5 mg/kg bw/day	19 mg/m3	0,04 mg/kg bw/day	n.a.	n.a.

Predicted No Effect Concentration

octamethylcyclotetrasiloxane [D4]

Compartment	**PNEC**
Fresh water	0,0015 mg/l
Marine water	0,00015 mg/l
Fresh water sediment	3 mg/kg
Marine sediment	0,3 mg/kg
Soil	0,54 mg/kg
Sewage treatment plant	10 mg/l
Oral	41 mg/kg food

Octamethyltrisiloxane

Compartment	**PNEC**
Fresh water sediment	8,9 mg/kg dry weight (d.w.)
Marine sediment	0,89 mg/kg dry weight (d.w.)
Soil	1,7 mg/kg food
Sewage treatment plant	1 mg/l
Soil	0,5 mg/kg dry weight (d.w.)

8.2 Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use safety glasses (with side shields). Safety glasses (with side shields) should be consistent with EN 166 or equivalent.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.
Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2 (meeting standard EN 14387).

Environmental exposure controls
See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	
Physical state	liquid
Color	colourless
Odor	slight
Odor Threshold	No data available
pH	No data available
Melting point/freezing point	
Melting point/range	-82 °C

Freezing point	not determined
Boiling point or initial boiling point and boiling range	
Boiling point (760 mmHg)	152,6 °C
Flash point	**closed cup** 34,4 °C
Flammability (solid, gas)	Not applicable
Flammability (liquids)	not determined
Lower explosion limit	0,9 % vol
Upper explosion limit	13,8 % vol
Vapor Pressure	4,54 hPa
Relative Vapor Density (air = 1)	1,04
Relative Density (water = 1)	0,816
Solubility(ies)	
Water solubility	not determined
Partition coefficient: n-octanol/water	log Pow: 6,6
Auto-ignition temperature	350 °C
Decomposition temperature	No data available
Kinematic Viscosity	1,0 cSt at 25 °C
Particle characteristics	
Particle size	Not applicable

9.2 Other information

Molecular weight	No data available
Explosive properties	Not explosive
Oxidizing properties	The substance or mixture is not classified as oxidizing.
Self-heating substances	The substance or mixture is not classified as self heating.
Metal corrosion rate	Not corrosive to metals
Evaporation Rate (Butyl Acetate = 1)	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: Not classified as a reactivity hazard.

10.2 Chemical stability: Stable under normal conditions.

10.3 Possibility of hazardous reactions: Can react with strong oxidizing agents. Vapours may form explosive mixture with air. Flammable liquid and vapour.

10.4 Conditions to avoid: Avoid static discharge. Heat, flames and sparks.

10.5 Incompatible materials: Avoid contact with oxidizing materials.

10.6 Hazardous decomposition products
No hazardous decomposition products are known.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

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

Information on likely routes of exposure
Inhalation, Eye contact, Skin contact, Ingestion.

Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)

Acute Toxicity Endpoints:

Acute oral toxicity

Information for the Product:

Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

Typical for this family of materials.
LD50, Rat, male and female, > 2 000 mg/kg No deaths occurred at this concentration.

Information for components:

octamethylcyclotetrasiloxane [D4]
LD50, Rat, male, > 4 800 mg/kg No deaths occurred at this concentration.

Octamethyltrisiloxane
LD50, Rat, female, > 2 000 mg/kg No deaths occurred at this concentration.

Acute dermal toxicity

Information for the Product:

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Typical for this family of materials.
LD50, Rat, > 2 000 mg/kg No deaths occurred at this concentration.

Information for components:

octamethylcyclotetrasiloxane [D4]

LD50, Rat, male and female, > 2 400 mg/kg No deaths occurred at this concentration.

Octamethyltrisiloxane
LD50, Rat, male and female, > 2 000 mg/kg No deaths occurred at this concentration.

Acute inhalation toxicity

Information for the Product:

No adverse effects are anticipated from single exposure to mist.

For this family of materials:
LC50, Rat, male and female, 4 Hour, vapour, > 22,6 mg/l No deaths occurred at this concentration.
Information for components:

octamethylcyclotetrasiloxane [D4]
LC50, Rat, male and female, 4 Hour, dust/mist, 36 mg/l OECD Test Guideline 403

Octamethyltrisiloxane
LC50, Rat, male and female, 4 Hour, vapour, > 22,6 mg/l No deaths occurred at this concentration.

Skin corrosion/irritation

Information for the Product:

Based on testing for product(s) in this family of materials:
Brief contact is essentially nonirritating to skin.

Information for components:

octamethylcyclotetrasiloxane [D4]
Brief contact is essentially nonirritating to skin.

Octamethyltrisiloxane
Brief contact is essentially nonirritating to skin.

Serious eye damage/eye irritation

Information for the Product:

For similar material(s):
May cause slight temporary eye irritation.
Corneal injury is unlikely.

Information for components:

octamethylcyclotetrasiloxane [D4]
Essentially nonirritating to eyes.

Octamethyltrisiloxane
May cause slight temporary eye irritation.
Corneal injury is unlikely.

Sensitization

Information for the Product:

For skin sensitization:
For this family of materials, sensitization studies done in guinea pigs have been negative.

For respiratory sensitization:
No relevant data found.

Information for components:

octamethylcyclotetrasiloxane [D4]
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Octamethyltrisiloxane
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Information for the Product:

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Information for components:

octamethylcyclotetrasiloxane [D4]
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Octamethyltrisiloxane
Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Aspiration Hazard

Information for the Product:

Based on available information, aspiration hazard could not be determined.

Information for components:

octamethylcyclotetrasiloxane [D4]
May be harmful if swallowed and enters airways.

Octamethyltrisiloxane
Based on available information, aspiration hazard could not be determined.

Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Information for the Product:

In animals, effects have been reported on the following organs:
Liver.
This material contains octamethyltrisiloxane (L3). Repeated inhalation exposure in rats to L3 resulted in protoporphyrin accumulation in the liver. Without knowledge of the specific mechanism leading to the protoporphyrin accumulation the relevance of this finding to humans is unknown.

Information for components:

octamethylcyclotetrasiloxane [D4]
In animals, effects have been reported on the following organs:
Kidney.
Liver.
Respiratory tract.
Female reproductive organs.

Octamethyltrisiloxane
In animals, effects have been reported on the following organs:
Liver
This material contains octamethyltrisiloxane (L3). Repeated inhalation exposure in rats to L3 resulted in protoporphyrin accumulation in the liver. Without knowledge of the specific mechanism leading to the protoporphyrin accumulation the relevance of this finding to humans is unknown.

Carcinogenicity

Information for the Product:

Did not cause cancer in laboratory animals.

Information for components:

octamethylcyclotetrasiloxane [D4]
Results from a 2 year repeated vapour inhalation exposure study to rats of octamethylcyclotetrasiloxane (D4) indicate effects (benign uterine adenomas) in the uterus of female animals. This finding occurred at the highest exposure dose (700 ppm) only. Studies to date have not demonstrated if these effects occur through pathways that are

relevant to humans. Repeated exposure in rats to D4 resulted in protoporphyrin accumulation in the liver. Without knowledge of the specific mechanism leading to the protoporphyrin accumulation the relevance of this finding to humans is unknown.

Octamethyltrisiloxane
Did not cause cancer in laboratory animals.

Teratogenicity

Information for the Product:

Did not cause birth defects or any other fetal effects in laboratory animals.

Information for components:

octamethylcyclotetrasiloxane [D4]
Did not cause birth defects or any other fetal effects in laboratory animals.

Octamethyltrisiloxane
Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity

Information for the Product:

In animal studies, did not interfere with reproduction. In animal studies, did not interfere with fertility.

Information for components:

octamethylcyclotetrasiloxane [D4]
In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. In animal studies, has been shown to interfere with fertility.

Octamethyltrisiloxane
In animal studies, did not interfere with fertility. In animal studies, did not interfere with reproduction.

Mutagenicity

Information for the Product:

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Information for components:

octamethylcyclotetrasiloxane [D4]
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Octamethyltrisiloxane

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

11.2 Information on other hazards

Endocrine disrupting properties

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.

Information for components:

octamethylcyclotetrasiloxane [D4]
The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

Octamethyltrisiloxane
The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

12.1 Toxicity

Acute toxicity to fish
No toxicity at the limit of solubility
LC50, Oncorhynchus mykiss (rainbow trout), flow-through test, 96 Hour, > 0,0191 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates
No toxicity at the limit of solubility
EC50, Daphnia magna (Water flea), flow-through test, 48 Hour, > 0,020 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
No toxicity at the limit of solubility
EC50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth rate, > 94 mg/l, OECD Test Guideline 201

Long-term (chronic) aquatic hazard
Chronic toxicity to fish
No toxicity at the limit of solubility
NOEC, Oncorhynchus mykiss (rainbow trout), 90 d, > 0,027 mg/l

Chronic toxicity to aquatic invertebrates
No toxicity at the limit of solubility
NOEC, Daphnia magna (Water flea), flow-through test, 21 d, > 0,015 mg/l

12.2 Persistence and degradability

Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 310

12.3 Bioaccumulative potential

Bioaccumulation: Biomagnification factor <1 Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).
Partition coefficient: n-octanol/water(log Pow): 6,6
Bioconcentration factor (BCF): >= 500 Pimephales promelas (fathead minnow) OECD Test Guideline 305

12.4 Mobility in soil

Partition coefficient (Koc): 3179 Estimated.

12.5 Results of PBT and vPvB assessment

octamethylcyclotetrasiloxane [D4]

Octamethylcyclotetrasiloxane (D4) meets the current criteria for PBT and vPvB under REACh Annex XIII or other regionally specific criteria. However, D4 does not behave similarly to known PBT/vPvB substances. The weight of scientific evidence from field studies shows that D4 is not biomagnifying in aquatic and terrestrial food webs. D4 in air will degrade by reaction with naturally occurring hydroxyl radicals in the atmosphere. Any D4 in air that does not degrade by reaction with hydroxyl radicals is not expected to deposit from the air to water, to land, or to living organisms.

Octamethyltrisiloxane

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Endocrine disrupting properties

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.

octamethylcyclotetrasiloxane [D4]

The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

Octamethyltrisiloxane

The substance is not considered to have endocrine disrupting properties according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

12.7 Other adverse effects

octamethylcyclotetrasiloxane [D4]

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Octamethyltrisiloxane

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Do not dump into any sewers, on the ground, or into any body of water. This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

SECTION 14: TRANSPORT INFORMATION

Classification for ROAD and Rail transport (ADR/RID):

14.1	**UN number or ID number**	UN 1993
14.2	**UN proper shipping name**	FLAMMABLE LIQUID, N.O.S.(Octamethyltrisiloxane)
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Not considered environmentally hazardous based on available data.
14.6	**Special precautions for user**	Hazard Identification Number: 30

Classification for INLAND waterways (ADNR/ADN):
Consult your Dow contact before transporting by inland waterway

Classification for SEA transport (IMO-IMDG):

14.1	**UN number or ID number**	UN 1993
14.2	**UN proper shipping name**	FLAMMABLE LIQUID, N.O.S.(Octamethyltrisiloxane)
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Not considered as marine pollutant based on available data.
14.6	**Special precautions for user**	EmS: F-E, S-E
14.7	**Maritime transport in bulk according to IMO instruments**	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

14.1	**UN number or ID number**	UN 1993

14.2	**UN proper shipping name**	Flammable liquid, n.o.s.(Octamethyltrisiloxane)
14.3	**Transport hazard class(es)**	3
14.4	**Packing group**	III
14.5	**Environmental hazards**	Not applicable
14.6	**Special precautions for user**	No data available.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15: REGULATORY INFORMATION

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

REACh Regulation (EC) No 1907/2006
This product contains only components that have been either registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH)., The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer´s/user´s responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)	Conditions of restriction for the following entries should be considered: Number on list 3, 40 octamethylcyclotetrasiloxane [D4] (Number on list 70)

Authorisation status under REACH:
The following substance/s contained in this product might be or is/are subject to authorization in accordance with REACH:

CAS-No.: 556-67-2	Name: octamethylcyclotetrasiloxane [D4]

Authorisation status: listed in the Candidate List of Substances of Very High Concern for Authorisation
Authorisation number: Not available
Sunset date: Not available
Exempted (Categories of) Uses: Not available

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Listed in Regulation: FLAMMABLE LIQUIDS
Number in Regulation: P5c
5 000 t
50 000 t

Installations classified for the protection of the environment (Environment Code R511-9)
4331: Flammable liquids category 2 or 3 excluding rubric 4330

Occupational Illnesses (R-461-3, France): (Not applicable)

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

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H226	Flammable liquid and vapour.
H361f	Suspected of damaging fertility.
H410	Very toxic to aquatic life with long lasting effects.

Revision
Identification Number: 4021767 / A560 / Issue Date: 19.04.2022 / Version: 5.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

Dow IHG	Dow Industrial Hygiene Guideline
TWA	Time weighted average
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)
Aquatic Chronic	Long-term (chronic) aquatic hazard
Flam. Liq.	Flammable liquids
Repr.	Reproductive toxicity

Full text of other abbreviations
ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - AmericanSociety for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associatedwith x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO -

International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA- Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References
This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW FRANCE S.A.S. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.
FR

Annex

Exposure Scenario

Number	Title
ES1	Manufacturing and on-site use
ES2	Used for formulation of personal care products
ES3	Used for formulation of coatings at downstream industrial sites
ES4	Use in coatings
ES5	Sealants
ES6	Electronics and optical product manufacturing
ES7	In situ non-metal surface treatment
ES8	Heat transfer fluid use at downstream industrial sites
ES9	Professional use of personal care products
ES10	Use in laboratories
ES11	Uses in cosmetics/personal care products, perfumes and fragrances
ES12	Formulation of medical adhesives and pharmaceuticals

ES1: Manufacturing and on-site use

1.1. Title section

Structured Short Title	:	Manufacture; Various sectors (SU8, SU9, SU10).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC1, ERC2
Worker	
CS2	PROC1
CS3	PROC2
CS4	PROC3
CS5	PROC4
CS6	PROC5
CS7	PROC8a
CS8	PROC8b
CS9	PROC9

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Manufacture of the substance (ERC1) / Formulation into mixture (ERC2)

Product (article) characteristics		
Covers concentrations up to 100 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 330000 kg
Release type	:	Continuous release
Emission days	:	100
Technical and organisational conditions and measures		
Cooler and condenser		

Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2). No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated
STP effluent	:	3 100 m3/d
STP type	:	Onsite Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated
STP effluent	:	3 100 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	3 100 000 m3/d
Local freshwater dilution factor	:	900
Local marine water dilution factor	:	1 000

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 6600 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Confined space entry permits		

General Permit to Work (PTW) for cleaning and maintenance activities Flush, purge and vent vessel lines before cleaning or maintenance. Plant integrity checks Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Chlorosilanes are used during the production of the registered substance. Due to the corrosive and flammable nature of the substance, all aspects of chlorosilane handling, including on-site storage and transfer, are subject to highly controlled conditions. The Centre Européen des Silicones (CES) manual on Safe Handling of Chlorosilanes is considered to be implemented at sites using the substance. Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. All equipments must be thoroughly dried, and enclosed to prevent contact with atmospheric moisture. Risk management measures for the use of chlorosilanes are applicable. Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear a full face respirator conforming to EN136. Wear suitable face shield. Tightly fitting safety goggles Fluorinated gloves or gauntlets Nitrile gloves or gauntlets Wear an impervious suit. Apron When prolonged exposure is expected: Self-contained, positive pressure breathing apparatus
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 6600 kg
Duration	:	Exposure duration > 240 min

Use frequency	:	1 uses per day

Technical and organisational conditions and measures
Process safety assessment General standard operating procedures to control routine activities Confined space entry permits General Permit to Work (PTW) for cleaning and maintenance activities Flush, purge and vent vessel lines before cleaning or maintenance. Plant integrity checks Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Chlorosilanes are used during the production of the registered substance. Due to the corrosive and flammable nature of the substance, all aspects of chlorosilane handling, including on-site storage and transfer, are subject to highly controlled conditions. The Centre Européen des Silicones (CES) manual on Safe Handling of Chlorosilanes is considered to be implemented at sites using the substance. Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. All equipments must be thoroughly dried, and enclosed to prevent contact with atmospheric moisture. Risk management measures for the use of chlorosilanes are applicable. Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear a full face respirator conforming to EN136. Wear suitable face shield. Tightly fitting safety goggles Fluorinated gloves or gauntlets Nitrile gloves or gauntlets Wear an impervious suit. Apron When prolonged exposure is expected: Self-contained, positive pressure breathing apparatus
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics
Covers concentrations up to 100 %
Physical form of product : Liquid

Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 6600 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Confined space entry permits General Permit to Work (PTW) for cleaning and maintenance activities Flush, purge and vent vessel lines before cleaning or maintenance. Plant integrity checks Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Chlorosilanes are used during the production of the registered substance. Due to the corrosive and flammable nature of the substance, all aspects of chlorosilane handling, including on-site storage and transfer, are subject to highly controlled conditions. The Centre Européen des Silicones (CES) manual on Safe Handling of Chlorosilanes is considered to be implemented at sites using the substance. Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. All equipments must be thoroughly dried, and enclosed to prevent contact with atmospheric moisture. Risk management measures for the use of chlorosilanes are applicable. Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear a full face respirator conforming to EN136. Wear suitable face shield. Tightly fitting safety goggles Fluorinated gloves or gauntlets Nitrile gloves or gauntlets Wear an impervious suit. Apron When prolonged exposure is expected: Self-contained, positive pressure breathing apparatus		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 6600 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Confined space entry permits General Permit to Work (PTW) for cleaning and maintenance activities Flush, purge and vent vessel lines before cleaning or maintenance. Plant integrity checks Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Chlorosilanes are used during the production of the registered substance. Due to the corrosive and flammable nature of the substance, all aspects of chlorosilane handling, including on-site storage and transfer, are subject to highly controlled conditions. The Centre Européen des Silicones (CES) manual on Safe Handling of Chlorosilanes is considered to be implemented at sites using the substance. Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. All equipments must be thoroughly dried, and enclosed to prevent contact with atmospheric moisture. Risk management measures for the use of chlorosilanes are applicable. Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear a full face respirator conforming to EN136. Wear suitable face shield. Tightly fitting safety goggles Fluorinated gloves or gauntlets Nitrile gloves or gauntlets Wear an impervious suit. Apron When prolonged exposure is expected:		

Self-contained, positive pressure breathing apparatus		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 6600 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Confined space entry permits General Permit to Work (PTW) for cleaning and maintenance activities Flush, purge and vent vessel lines before cleaning or maintenance. Plant integrity checks Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Chlorosilanes are used during the production of the registered substance. Due to the corrosive and flammable nature of the substance, all aspects of chlorosilane handling, including on-site storage and transfer, are subject to highly controlled conditions. The Centre Européen des Silicones (CES) manual on Safe Handling of Chlorosilanes is considered to be implemented at sites using the substance. Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. All equipments must be thoroughly dried, and enclosed to prevent contact with atmospheric moisture. Risk management measures for the use of chlorosilanes are applicable. Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear a full face respirator conforming to EN136. Wear suitable face shield.		

Tightly fitting safety goggles Fluorinated gloves or gauntlets Nitrile gloves or gauntlets Wear an impervious suit. Apron When prolonged exposure is expected: Self-contained, positive pressure breathing apparatus

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 6600 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day

Technical and organisational conditions and measures
Process safety assessment General standard operating procedures to control routine activities Confined space entry permits General Permit to Work (PTW) for cleaning and maintenance activities Flush, purge and vent vessel lines before cleaning or maintenance. Plant integrity checks Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Chlorosilanes are used during the production of the registered substance. Due to the corrosive and flammable nature of the substance, all aspects of chlorosilane handling, including on-site storage and transfer, are subject to highly controlled conditions. The Centre Européen des Silicones (CES) manual on Safe Handling of Chlorosilanes is considered to be implemented at sites using the substance. Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. All equipments must be thoroughly dried, and enclosed to prevent contact with atmospheric moisture. Risk management measures for the use of chlorosilanes are applicable.

Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear a full face respirator conforming to EN136. Wear suitable face shield. Tightly fitting safety goggles Fluorinated gloves or gauntlets Nitrile gloves or gauntlets Wear an impervious suit. Apron When prolonged exposure is expected: Self-contained, positive pressure breathing apparatus
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 6600 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Confined space entry permits General Permit to Work (PTW) for cleaning and maintenance activities Flush, purge and vent vessel lines before cleaning or maintenance. Plant integrity checks Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Chlorosilanes are used during the production of the registered substance. Due to the corrosive and flammable nature of the substance, all aspects of chlorosilane handling,		

including on-site storage and transfer, are subject to highly controlled conditions. The Centre Européen des Silicones (CES) manual on Safe Handling of Chlorosilanes is considered to be implemented at sites using the substance. Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. All equipments must be thoroughly dried, and enclosed to prevent contact with atmospheric moisture. Risk management measures for the use of chlorosilanes are applicable. Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear a full face respirator conforming to EN136. Wear suitable face shield. Tightly fitting safety goggles Fluorinated gloves or gauntlets Nitrile gloves or gauntlets Wear an impervious suit. Apron When prolonged exposure is expected: Self-contained, positive pressure breathing apparatus
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 6600 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Confined space entry permits General Permit to Work (PTW) for cleaning and maintenance activities Flush, purge and vent vessel lines before cleaning or maintenance.		

Plant integrity checks Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Chlorosilanes are used during the production of the registered substance. Due to the corrosive and flammable nature of the substance, all aspects of chlorosilane handling, including on-site storage and transfer, are subject to highly controlled conditions. The Centre Européen des Silicones (CES) manual on Safe Handling of Chlorosilanes is considered to be implemented at sites using the substance. Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. All equipments must be thoroughly dried, and enclosed to prevent contact with atmospheric moisture. Risk management measures for the use of chlorosilanes are applicable. Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear a full face respirator conforming to EN136. Wear suitable face shield. Tightly fitting safety goggles Fluorinated gloves or gauntlets Nitrile gloves or gauntlets Wear an impervious suit. Apron When prolonged exposure is expected: Self-contained, positive pressure breathing apparatus
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Manufacture of the substance (ERC1) / Formulation into mixture (ERC2)

Compartment	Exposure level	RCR
Freshwater sediment	0,017 mg/kg wet weight (EUSES)	0,013
Marine sediment	0,005 mg/kg wet weight (EUSES)	0,04
Soil	0,00001 mg/kg wet weight (EUSES)	< 0,001

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

Exposure route	Health effect	Exposure	Exposure level	RCR

		indicator		
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	0,069 mg/m³ (ECETOC TRA worker v2.0)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,14 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	3,4 mg/m³ (ECETOC TRA worker v2.0)	0,044

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA worker v2.0)	0,088

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	14 mg/m³ (ECETOC TRA worker v2.0)	0,18

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

Exposure route	Health effect	Exposure	Exposure level	RCR

		indicator		
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	8,6 mg/m³ (ECETOC TRA worker v2.0)	0,11

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"

ES2: Used for formulation of personal care products

2.1. Title section

Structured Short Title	:	Formulation or re-packing; Cosmetics, personal care products (PC39); Formulation [mixing] of preparations and/or re-packaging (SU10).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC2
Worker	
CS2	PROC1
CS3	PROC2
CS4	PROC3
CS5	PROC4
CS6	PROC5
CS7	PROC8a
CS8	PROC8a
CS9	PROC9
CS10	PROC14

2.2. Conditions of use affecting exposure

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 90000 kg
Release type	:	Continuous release
Emission days	:	200

Technical and organisational conditions and measures		
Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2). No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	10 000 m3/d
STP type	:	Onsite Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	10 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	390 000 m3/d

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment		

General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits		

Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring		

Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.		

Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		

Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day

Technical and organisational conditions and measures
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected:

Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 450 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

2.3. Exposure estimation and reference to its source

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

Compartment	Exposure level	RCR
Freshwater sediment	0,0196 mg/kg wet weight (EUSES)	0,015
Marine sediment	0,0069 mg/kg wet weight (EUSES)	0,052
Soil	0,0106 mg/kg wet weight (EUSES)	< 0,024

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	0,069 mg/m³ (ECETOC TRA worker v2.0)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,14 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	3,4 mg/m³ (ECETOC TRA worker v2.0)	0,044

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,069 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	6,9 mg/m³	0,088

			(ECETOC TRA worker v2.0)	

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	14 mg/m³ (ECETOC TRA worker v2.0)	0,18

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	8,6 mg/m³ (ECETOC TRA	0,11

			worker v2.0)	

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,34 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES3: Used for formulation of coatings at downstream industrial sites

3.1. Title section

Structured Short Title	:	Formulation or re-packing; Coatings and paints, thinners, paint removers (PC9a); Formulation [mixing] of preparations and/or re-packaging (SU10).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC2
Worker	
CS2	PROC2
CS3	PROC3
CS4	PROC4
CS5	PROC5
CS6	PROC8a
CS7	PROC8b
CS8	PROC9

3.2. Conditions of use affecting exposure

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 4000 kg
Release type	:	Continuous release
Emission days	:	200
Technical and organisational conditions and measures		
Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2).		

No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
STP type	:	Onsite Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m3/d

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 20 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers		

Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 20 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks		

Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 20 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice		

Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 20 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles		

Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 20 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day

Technical and organisational conditions and measures
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection.

Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 20 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 20 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

3.3. Exposure estimation and reference to its source

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

Compartment	Exposure level	RCR
Freshwater sediment	0,0848 mg/kg wet weight (EUSES)	0,064
Marine sediment	0,0085 mg/kg wet weight (EUSES)	0,063
Soil	0,0133 mg/kg wet weight (EUSES)	< 0,029

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,027 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	0,69 mg/m³ (ECETOC TRA worker v2.0)	0,009

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,014 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	1,4 mg/m³ (ECETOC TRA worker v2.0)	0,018

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,14 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	2,8 mg/m³ (ECETOC TRA	0,035

			worker v2.0)	

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,27 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA worker v2.0)	0,088

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	8,6 mg/m³ (ECETOC TRA worker v2.0)	0,11

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,14 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA	0,088

			worker v2.0)	

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES4: Use in coatings

4.1. Title section

Structured Short Title	:	Use at industrial sites; Coatings and paints, thinners, paint removers (PC9a); Building and construction work (SU19).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC5
Worker	
CS2	PROC7
CS3	PROC8a
CS4	PROC8b
CS5	PROC10

4.2. Conditions of use affecting exposure

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 1000 kg
Release type	:	Continuous release
Emission days	:	100
Technical and organisational conditions and measures		
Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2). No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		

STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m3/d

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 10 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles		

Apron Nitrile gloves or gauntlets Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 10 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 10 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 10 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

4.3. Exposure estimation and reference to its source

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

Compartment	Exposure level	RCR
Freshwater sediment	0,0028 mg/kg wet weight (EUSES)	0,002
Marine sediment	0,00024 mg/kg wet weight (EUSES)	0,002
Soil	0,0000097 mg/kg wet weight (EUSES)	< 0,001

4.3.2. Worker exposure: Industrial spraying (PROC7)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,43 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	1,7 mg/m³ (ECETOC TRA worker v2.0)	0,22

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,27 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA worker v2.0)	0,088

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,14 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	1,7 mg/m³ (ECETOC TRA	0,022

			worker v2.0)	

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA worker v2.0)	0,088
dermal	systemic	long-term	5,5 mg/kg bw/day (ECETOC TRA worker v2.0)	0,005

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES5: Sealants

5.1. Title section

Structured Short Title	:	Use at industrial sites; Adhesives, sealants (PC1); Manufacture of computer, electronic and optical products, electrical equipment (SU16).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC5
Worker	
CS2	PROC5, PROC13
CS3	PROC8b
CS4	PROC10

5.2. Conditions of use affecting exposure

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 300 kg
Release type	:	Continuous release
Emission days	:	100
Technical and organisational conditions and measures		
Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2). No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		

STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m3/d

5.2.2. Control of worker exposure: Mixing or blending in batch processes (PROC5) / Treatment of articles by dipping and pouring (PROC13)

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 3 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		

Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 3 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day

Technical and organisational conditions and measures
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected:

Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 3 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		

Indoor or outdoor use	:	Indoor use

5.3. Exposure estimation and reference to its source

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

Compartment	Exposure level	RCR
Freshwater sediment	0,0028 mg/kg wet weight (EUSES)	0,002
Marine sediment	0,00024 mg/kg wet weight (EUSES)	0,002
Soil	< 0,0000001 mg/kg wet weight (EUSES)	< 0,001

5.3.2. Worker exposure: Mixing or blending in batch processes (PROC5) / Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,27 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA worker v2.0)	0,88

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	14 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	1,7 mg/m³ (ECETOC TRA worker v2.0)	0,22

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	5,5 mg/kg bw/day	0,005

			(ECETOC TRA worker v2.0)	
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA worker v2.0)	0,088

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES6: Electronics and optical product manufacturing

6.1. Title section

Structured Short Title	:	Use at industrial sites; Washing and cleaning products (PC35); Manufacture of computer, electronic and optical products, electrical equipment (SU16).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC4
Worker	
CS2	PROC1
CS3	PROC8b
CS4	PROC9
CS5	PROC13

6.2. Conditions of use affecting exposure

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 400 kg
Release type	:	Continuous release
Emission days	:	100
Technical and organisational conditions and measures		
Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2). No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		

STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
STP type	:	Onsite Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m3/d

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping.		

Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		

Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron		

Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

6.3. Exposure estimation and reference to its source

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

Compartment	**Exposure level**	**RCR**
Freshwater sediment	0,0028 mg/kg wet weight (EUSES)	0,002
Marine sediment	0,00024 mg/kg wet weight (EUSES)	0,002
Soil	0,0000039 mg/kg wet weight (EUSES)	< 0,001

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

Exposure route	**Health effect**	**Exposure indicator**	**Exposure level**	**RCR**
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	0,069 mg/m³ (ECETOC TRA worker v2.0)	< 0,001

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

Exposure route	**Health effect**	**Exposure indicator**	**Exposure level**	**RCR**
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	8,6 mg/m³ (ECETOC TRA worker v2.0)	0,11

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES7: In situ non-metal surface treatment

7.1. Title section

Structured Short Title	:	Use at industrial sites; Non-metal surface treatment products (PC15); Various sectors (SU11, SU12).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC3, ERC5
Worker	
CS2	PROC2
CS3	PROC3
CS4	PROC4
CS5	PROC5
CS6	PROC8a
CS7	PROC8b
CS8	PROC9

7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Formulation into solid matrix (ERC3) / Use at industrial site leading to inclusion into/onto article (ERC5)

Product (article) characteristics		
Covers concentrations up to 100 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 400 kg
Release type	:	Continuous release
Emission days	:	100
Technical and organisational conditions and measures		
Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2).		

No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
STP type	:	Onsite Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m3/d

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers		

Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks		

Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice		

Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles		

Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day

Technical and organisational conditions and measures
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection.

Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 4 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure: Formulation into solid matrix (ERC3) / Use at industrial site leading to inclusion into/onto article (ERC5)

Compartment	Exposure level	RCR
Freshwater sediment	0,0041 mg/kg wet weight (EUSES)	0,003
Marine sediment	0,0035 mg/kg wet weight (EUSES)	0,026
Soil	0,00018 mg/kg wet weight (EUSES)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,14 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	3,4 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA worker v2.0)	0,088

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	14 mg/m³	0,18

			(ECETOC TRA worker v2.0)	

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	8,6 mg/m³ (ECETOC TRA worker v2.0)	0,11

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	34 mg/m³	0,44

			(ECETOC TRA worker v2.0)	

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES8: Heat transfer fluid use at downstream industrial sites

8.1. Title section

Structured Short Title	:	Use at industrial sites; Heat transfer fluids (PC16).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC7
Worker	
CS2	PROC1
CS3	PROC8a
CS4	PROC8b

8.2. Conditions of use affecting exposure

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 200 kg
Release type	:	Continuous release
Emission days	:	100
Technical and organisational conditions and measures		
Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2). No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario

STP effluent	:	2 000 m3/d
STP type	:	Onsite Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m3/d

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 2 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		

Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 2 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron		

Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 2 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

8.3. Exposure estimation and reference to its source

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

Compartment	Exposure level	RCR
Freshwater sediment	0,085 mg/kg wet weight (EUSES)	0,064
Marine sediment	0,0085 mg/kg wet weight (EUSES)	0,063
Soil	0,013 mg/kg wet weight (EUSES)	< 0,029

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	0,069 mg/m³ (ECETOC TRA worker v2.0)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day	< 0,001

			(ECETOC TRA worker v2.0)	
inhalative	systemic	long-term	8,6 mg/m³ (ECETOC TRA worker v2.0)	0,11

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES9: Professional use of personal care products

9.1. Title section

Structured Short Title	:	Widespread use by professional workers; Cosmetics, personal care products (PC39).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC8a
Consumer	
CS2	PC39

9.2. Conditions of use affecting exposure

9.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 25 kg
Release type	:	Continuous release
Emission days	:	365
Technical and organisational conditions and measures		
Central biological waste water treatment		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		

Receiving surface water flow	:	18 000 m3/d

9.3. Exposure estimation and reference to its source

9.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Compartment	Exposure level	RCR
Freshwater sediment	0,0085 mg/kg wet weight (EUSES)	0,006
Marine sediment	0,0008 mg/kg wet weight (EUSES)	0,006
Soil	0,00088 mg/kg wet weight (EUSES)	< 0,002

9.3.2. Consumer exposure: Cosmetics, personal care products (PC39)

Additional information on exposure estimation
The human health assessment is not considered for professional and consumer use of personal care products, since these are outside the scope of REACH.

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES10: Use in laboratories

10.1. Title section

Structured Short Title	:	Use at industrial sites; Laboratory chemicals (PC21); Scientific research and development (SU24).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC
Worker	
CS2	PROC15

10.2. Conditions of use affecting exposure

10.2.1. Control of environmental exposure: not applicable (ERC)

Product (article) characteristics		
Covers concentrations up to 100 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	< 10 kg

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day

Technical and organisational conditions and measures
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Operator monitoring Safety and environmental audits Regular training of workers Integrated safety management systems Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Containment measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure
Indoor or outdoor use : Indoor use

10.3. Exposure estimation and reference to its source

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	6,9 mg/m³ (ECETOC TRA worker v2.0)	0,088

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"

If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES11: Uses in cosmetics/personal care products, perfumes and fragrances

11.1. Title section

Structured Short Title	:	Consumer use; Cosmetics, personal care products (PC39).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC8a
Consumer	
CS2	PC39

11.2. Conditions of use affecting exposure

11.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 25 kg
Release type	:	Continuous release
Emission days	:	365
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m3/d

11.2.2. Control of consumer exposure: Cosmetics, personal care products (PC39)

Product (article) characteristics		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa

11.3. Exposure estimation and reference to its source

11.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)

Compartment	Exposure level	RCR
Freshwater sediment	0,0085 mg/kg wet weight (EUSES)	0,006
Marine sediment	0,0008 mg/kg wet weight (EUSES)	0,006
Soil	0,00088 mg/kg wet weight (EUSES)	< 0,002

11.3.2. Consumer exposure: Cosmetics, personal care products (PC39)

Additional information on exposure estimation
The human health assessment is not considered for professional and consumer use of personal care products, since these are outside the scope of REACH.

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.

ES12: Formulation of medical adhesives and pharmaceuticals

12.1. Title section

Structured Short Title	:	Formulation or re-packing; Pharmaceuticals (PC29); Various sectors (SU10, SU20).
Substance	:	Octamethyltrisiloxane EC-No.: 203-497-4

Environment	
CS1	ERC2
Worker	
CS2	PROC1
CS3	PROC8a
CS4	PROC8b
CS5	PROC9

12.2. Conditions of use affecting exposure

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Amount used, frequency and duration of use (or from service life)		
Annual amount per site	:	<= 1000 kg
Release type	:	Continuous release
Emission days	:	200
Technical and organisational conditions and measures		
Central biological waste water treatment Discharge to aquatic environment is restricted (see section 4.2). No discharge of substance into waste water		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant

STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
STP type	:	Onsite Sewage Treatment Plant
STP sludge treatment	:	Landfill or incinerated Spreading as a worst case scenario
STP effluent	:	2 000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18 000 m3/d

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 5 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice		

Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).
Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 5 kg
Duration	:	Exposure duration 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		

Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).

Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 5 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day

Technical and organisational conditions and measures
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures
Conditions and measures related to personal protection, hygiene and health evaluation
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected:

Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use

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

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	Liquid
Vapour pressure	:	530 Pa
Amount used, frequency and duration of use (or from service life)		
Amount per Day	:	<= 5 kg
Duration	:	Exposure duration > 240 min
Use frequency	:	1 uses per day
Technical and organisational conditions and measures		
Process safety assessment General standard operating procedures to control routine activities Flush, purge and vent vessel lines before cleaning or maintenance. Safety and environmental audits Regular training of workers Integrated safety management systems Operator monitoring Plant integrity checks Take measures to prevent the build up of electrostatic charge. On-site storage vessels should be located outside, away from buildings, overhead utilities or piping. Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure. Additional Good Practice Advice Containment measures		
Conditions and measures related to personal protection, hygiene and health evaluation		
Tightly fitting safety goggles Apron Nitrile gloves or gauntlets When prolonged exposure is expected: Wear suitable respiratory protection. Provide a basic standard of general ventilation (1 to 3 air changes per hour).		
Other conditions affecting workers exposure		

Indoor or outdoor use	:	Indoor use

12.3. Exposure estimation and reference to its source

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

Compartment	Exposure level	RCR
Freshwater sediment	0,0847 mg/kg wet weight (EUSES)	0,064
Marine sediment	0,0085 mg/kg wet weight (EUSES)	0,063
Soil	0,0133 mg/kg wet weight (EUSES)	< 0,029

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,034 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	0,069 mg/m³ (ECETOC TRA worker v2.0)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	1,4 mg/kg bw/day (ECETOC TRA worker v2.0)	0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day	< 0,001

			(ECETOC TRA worker v2.0)	
inhalative	systemic	long-term	8,6 mg/m³ (ECETOC TRA worker v2.0)	0,11

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

Exposure route	Health effect	Exposure indicator	Exposure level	RCR
dermal	systemic	long-term	0,69 mg/kg bw/day (ECETOC TRA worker v2.0)	< 0,001
inhalative	systemic	long-term	34 mg/m³ (ECETOC TRA worker v2.0)	0,44

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

See ECHA guidance (http://guidance.echa.europa.eu/guidance_en.htm): "Guidance for downstream users"
If the conditions of downstream use deviate from the measures or parameters described in the exposure scenario, the downstream use can still be considered to be within the conditions of the exposure scenario when the following criteria are met: The resulting risk characterisation ratios (RCR) for the deviating conditions, using the method described in the scenario or a compatible tool ("scaling tool"), have to be equal to or lower than the values given in the exposure scenario. Scalable parameters are restricted to those that a downstream user can actively change by adapting the process, and may vary depending on the method used for exposure assessment. Intrinsic substance properties like vapour pressure or diffusion rates and those parameters specific to the process, e.g. the exposed skin area, may not be scaled.