

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by
Commission Regulation (EU) 2020/878



Capstone™ FS-63 Fluorosurfactant

Version	Revision Date:	SDS Number:	Date of last issue: 25.11.2024
3.1	10.02.2025	11279569-00005	Date of first issue: 27.09.2023

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

1.1 Product identifier

Trade name	:	Capstone™ FS-63 Fluorosurfactant
SDS-Identcode	:	130000051604
Unique Formula Identifier (UFI)	:	EPU5-8VKT-A4KD-9FJY

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

Use of the Substance/Mixture	:	Formulation [mixing] of preparations and/ or re-packaging (excluding alloys), For further information see Annex - Exposure scenario.
Recommended restrictions on use	:	For industrial use only., Do not use this product in consumer spray applications except in water-based coatings where the maximum concentration of active ingredient does not exceed 0.1 wt percent. Do not use or resell Chemours™ materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless agreed to by Seller in a written agreement covering such use. For further information, please contact your Chemours representative.

1.3 Details of the supplier of the safety data sheet

Company	:	Chemours Netherlands B.V. Baanhoekweg 22 3313 LA Dordrecht Netherlands
Telephone	:	+31-(0)-78-630-1011
Telefax	:	+31-78-6163737
E-mail address of person responsible for the SDS	:	sds-support@chemours.com

1.4 Emergency telephone number

+(353)-19014670 (CHEMTREC - Recommended) ; +353-(01) 809 2166 (Poison Information Center of Ireland)

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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 3	H226: Flammable liquid and vapour.
Acute toxicity, Category 1	H330: Fatal if inhaled.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Specific target organ toxicity - single exposure, Category 3	H336: May cause drowsiness or dizziness.
Specific target organ toxicity - repeated exposure, Category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H336 May cause drowsiness or dizziness.
H373 May cause damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P314 Get medical advice/ attention if you feel unwell.
P391 Collect spillage.

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Hazardous components which must be listed on the label:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts
Propan-2-ol

2.3 Other hazards

This substance/mixture contains components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB).

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

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

Inhalation of decomposition products in high concentration may cause shortness of breath (lung oedema).

Vapours may form explosive mixture with air.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts	Not Assigned 01-2119436357-36	Acute Tox. 1; H330 STOT RE 2; H373 (Liver) Aquatic Chronic 1; H410 M-Factor (Chronic aquatic toxicity): 10	>= 30 - < 50
Propan-2-ol	67-63-0 200-661-7 603-117-00-0 01-2119457558-25	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336	>= 20 - < 30

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : In the case of accident or if you feel unwell, seek medical ad-

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- vice immediately.
When symptoms persist or in all cases of doubt seek medical advice.
- Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
- If inhaled : If inhaled, remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Get medical attention immediately.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water.
Remove contaminated clothing and shoes.
Get medical attention if symptoms occur.
- In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention.
- If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention if symptoms occur.
Rinse mouth thoroughly with water.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : Inhalation may provoke the following symptoms:
Respiratory disorder
Shortness of breath
Lung oedema
Cough
Irritation
- Eye contact may provoke the following symptoms
Lachrymation
Redness
Discomfort
- Risks : Causes serious eye irritation.
Fatal if inhaled.
May cause drowsiness or dizziness.
May cause damage to organs through prolonged or repeated exposure.

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : Treat symptomatically and supportively.

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SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Do not use a solid water stream as it may scatter and spread fire.
Flash back possible over considerable distance.
Vapours may form explosive mixtures with air.
Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Hydrogen fluoride
carbonyl fluoride
potentially toxic fluorinated compounds
aerosolized particulates
Carbon oxides

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Evacuate personnel to safe areas.
Only trained personnel should re-enter the area.
Remove all sources of ignition.
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

6.2 Environmental precautions

Environmental precautions : Avoid release to the environment.
Prevent further leakage or spillage if safe to do so.
Prevent spreading over a wide area (e.g. by containment or oil

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barriers).
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

Methods for 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.
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.
Clean up remaining materials from spill with suitable absorbent.
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.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

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

Technical measures	: See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
Local/Total ventilation	: If sufficient ventilation is unavailable, use with local exhaust ventilation. Use explosion-proof electrical, ventilating and lighting equipment.
Advice on safe handling	: Do not breathe mist or vapours. Do not swallow. Do not get in eyes. Avoid prolonged or repeated contact with skin. Wash skin thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment Non-sparking tools should be used. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment.

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Do not breathe decomposition products.

Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Keep in properly labelled containers. Store locked up. 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.

Advice on common storage : Do not store with the following product types:
Strong oxidizing agents
Self-reactive substances and mixtures
Organic peroxides
Flammable liquids
Flammable solids
Pyrophoric liquids
Pyrophoric solids
Self-heating substances and mixtures
Substances and mixtures, which in contact with water, emit flammable gases
Explosives
Gases
Very acutely toxic substances and mixtures

7.3 Specific end use(s)

Specific use(s) : No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Propan-2-ol	67-63-0	OELV - 8 hrs (TWA)	200 ppm	IE OEL
	Further information: Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body			
		OELV - 15 min (STEL)	400 ppm	IE OEL
	Further information: Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body			

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Occupational exposure limits of decomposition products

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
hydrofluoric acid	7664-39-3	TWA	1.8 ppm 1.5 mg/m3	2000/39/EC
	Further information: Indicative			
		STEL	3 ppm 2.5 mg/m3	2000/39/EC
	Further information: Indicative			
		OELV - 15 min (STEL)	3 ppm 2.5 mg/m3 (Fluorine)	IE OEL
	Further information: Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body			
		OELV - 8 hrs (TWA)	1.8 ppm 1.5 mg/m3 (Fluorine)	IE OEL
	Further information: Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body			
Carbonyl difluoride	353-50-4	OELV - 15 min (STEL)	5 ppm 13 mg/m3	IE OEL
		OELV - 8 hrs (TWA)	2 ppm 5.4 mg/m3	IE OEL
		TWA	2.5 mg/m3 (Fluorine)	2000/39/EC
	Further information: Indicative			
Carbon dioxide	124-38-9	TWA	5,000 ppm 9,000 mg/m3	2006/15/EC
	Further information: Indicative			
		OELV - 8 hrs (TWA)	5,000 ppm 9,000 mg/m3	IE OEL
Carbon monoxide	630-08-0	STEL	100 ppm 117 mg/m3	2017/164/EU
	Further information: Indicative			
		TWA	20 ppm 23 mg/m3	2017/164/EU
	Further information: Indicative			
		OELV - 15 min (STEL)	100 ppm 117 mg/m3	IE OEL
	Further information: Repr 1A - Substances which are known human reproductive toxicants			
		OELV - 8 hrs (TWA)	20 ppm 23 mg/m3	IE OEL
	Further information: Repr 1A - Substances which are known human reproductive toxicants			
		TWA	20 ppm 23 mg/m3	2004/37/EC
	Further information: Carcinogens or mutagens			
		STEL	100 ppm 117 mg/m3	2004/37/EC
	Further information: Carcinogens or mutagens			

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

Substance name	End Use	Exposure routes	Potential health effects	Value
Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts	Workers	Inhalation	Acute local effects	0.3 mg/m3
	Workers	Skin contact	Long-term systemic effects	1.2 mg/kg bw/day
	Workers	Inhalation	Long-term systemic effects	0.042 mg/m3
	Workers	Inhalation	Long-term local effects	0.24 mg/m3
	Consumers	Skin contact	Long-term systemic effects	0.6 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	0.0104 mg/m3
Propan-2-ol	Consumers	Ingestion	Long-term systemic effects	0.006 mg/kg bw/day
	Workers	Inhalation	Long-term systemic effects	500 mg/m3
	Workers	Skin contact	Long-term systemic effects	888 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	89 mg/m3
	Consumers	Skin contact	Long-term systemic effects	319 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	26 mg/kg bw/day

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

Substance name	Environmental Compartment	Value
Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts	Fresh water	0.00093 mg/l
	Marine water	0.000093 mg/l
	Intermittent use/release	0.0303 mg/l
	Fresh water sediment	0.00493 mg/kg dry weight (d.w.)
	Soil	1 mg/kg dry weight (d.w.)
	Sewage treatment plant	100 mg/l
	Marine sediment	0.00049 mg/kg dry weight (d.w.)
Propan-2-ol	Fresh water	140.9 mg/l
	Marine water	140.9 mg/l
	Intermittent use/release	140.9 mg/l
	Sewage treatment plant	2251 mg/l
	Fresh water sediment	552 mg/kg dry

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		weight (d.w.)
	Marine sediment	552 mg/kg dry weight (d.w.)
	Soil	28 mg/kg dry weight (d.w.)
	Oral (Secondary Poisoning)	160 mg/kg food

8.2 Exposure controls

Engineering measures

Processing may form hazardous compounds (see section 10).
Minimize workplace exposure concentrations.
If sufficient ventilation is unavailable, use with local exhaust ventilation.
Use explosion-proof electrical, ventilating and lighting equipment.

Personal protective equipment

Eye/face protection : Wear the following personal protective equipment:
Safety goggles
Equipment should conform to I.S. EN 166

Hand protection
Material : butyl-rubber
Break through time : 480 min
Glove thickness : 0.89 mm

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Wear the following personal protective equipment:
If assessment demonstrates that there is a risk of explosive atmospheres or flash fires, use flame retardant antistatic protective clothing.
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.
Equipment should conform to I.S. EN 14387

Filter type : Combined particulates, acidic gas/vapour and organic vapour type (AE-P)

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	: liquid
Colour	: clear, colourless, yellow
Odour	: alcohol-like
Odour Threshold	: No data available
Melting point/freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flammability (solid, gas)	: Not applicable
Flammability (liquids)	: Ignitable (see flash point)
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available
Flash point	: 26 °C Method: Pensky-Martens closed cup
Auto-ignition temperature	: No data available
Decomposition temperature	: > 200 °C
pH	: 7 - 8.5
Viscosity	
Viscosity, kinematic	: No data available
Solubility(ies)	
Water solubility	: soluble

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Partition coefficient: n-octanol/water : log Pow: 0.35
(for a component of this mixture)

Vapour pressure : 13.79 hPa (20 °C)
Solvent

Density : 1.1 g/cm³

Relative vapour density : No data available

Particle characteristics
Particle size : Not applicable

9.2 Other information

Explosives : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Evaporation rate : No data available

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

Hazardous reactions : Flammable liquid and vapour.
Vapours may form explosive mixture with air.
Can react with strong oxidizing agents.
Hazardous decomposition products will be formed at elevated temperatures.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid : Oxidizing agents

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10.6 Hazardous decomposition products

Thermal decomposition : hydrofluoric acid
Carbonyl difluoride
Carbon dioxide
Carbon monoxide

SECTION 11: Toxicological information

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

Information on likely routes of exposure : Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity

Fatal if inhaled.

Product:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Remarks: Based on data from similar materials

Acute inhalation toxicity : Acute toxicity estimate (Rat): 0.005 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Expert judgement
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg
Remarks: Based on data from similar materials

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Acute oral toxicity : LD50 (Rat): > 1,000 mg/kg
Method: OECD Test Guideline 425
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : Approximate Lethal Concentration (Rat): 0.047 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rat): > 1,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Propan-2-ol:

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Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 25 mg/l
Exposure time: 6 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation

Not classified based on available information.

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation

Propan-2-ol:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Species : Rabbit
Method : OECD Test Guideline 405
Result : No eye irritation

Propan-2-ol:

Species : Rabbit
Result : Irritation to eyes, reversing within 21 days

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Test Type : Local lymph node assay (LLNA)

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Exposure routes : Skin contact
Species : Mouse
Method : OECD Test Guideline 429
Result : negative

Propan-2-ol:

Test Type : Buehler Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative

Germ cell mutagenicity

Not classified based on available information.

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Propan-2-ol:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Result: negative

Carcinogenicity

Not classified based on available information.

Components:

Propan-2-ol:

Species : Rat
Application Route : inhalation (vapour)

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Exposure time : 104 weeks
Method : OECD Test Guideline 451
Result : negative

Reproductive toxicity

Not classified based on available information.

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 415
Result: negative
Remarks: Based on data from similar materials

Effects on foetal development : Test Type: Reproduction/Developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

Propan-2-ol:

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Result: negative

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat
Application Route: Ingestion
Result: negative

STOT - single exposure

May cause drowsiness or dizziness.

Components:

Propan-2-ol:

Assessment : May cause drowsiness or dizziness.

STOT - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

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Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Exposure routes	:	Ingestion
Target Organs	:	Liver
Assessment	:	Shown to produce significant health effects in animals at concentrations of >10 to 100 mg/kg bw.

Repeated dose toxicity

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Species	:	Rat, male and female
LOAEL	:	3.6 mg/kg
Application Route	:	Ingestion
Exposure time	:	90 Days
Method	:	OECD Test Guideline 408
Remarks	:	Based on data from similar materials

Species	:	Rat, male
NOAEL	:	100 mg/kg
LOAEL	:	1,000 mg/kg
Application Route	:	Skin contact
Exposure time	:	28 Days
Method	:	OECD Test Guideline 410
Remarks	:	Based on data from similar materials

Propan-2-ol:

Species	:	Rat
NOAEL	:	12.5 mg/l
Application Route	:	inhalation (vapour)
Exposure time	:	104 Weeks

Aspiration toxicity

Not classified based on available information.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

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

Product:

Inhalation	:	Target Organs: Lungs Symptoms: Irritation, Shortness of breath, Symptoms may be delayed.
Eye contact	:	Symptoms: Irritation, Discomfort, Blurred vision
Ingestion	:	Symptoms: Shortness of breath, Rapid respiration, Fever, Drowsiness

SECTION 12: Ecological information

12.1 Toxicity

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 36.4 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 3.24 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 Remarks: Based on data from similar materials
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 22.44 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials NOEC (Pseudokirchneriella subcapitata (green algae)): 22.44 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 Remarks: Based on data from similar materials
Toxicity to fish (Chronic toxicity)	:	NOEC: 0.88 mg/l Exposure time: 90 d Species: Oncorhynchus mykiss (rainbow trout) Method: OECD Test Guideline 210 Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC: 0.0093 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Method: OECD Test Guideline 211

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Remarks: Based on data from similar materials

M-Factor (Chronic aquatic toxicity) : 10

Propan-2-ol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 9,640 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 10,000 mg/l
Exposure time: 24 h

Toxicity to microorganisms : EC50 (Pseudomonas putida): > 1,050 mg/l
Exposure time: 16 h

12.2 Persistence and degradability

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301D
Remarks: Based on data from similar materials

Propan-2-ol:

Biodegradability : Result: rapidly degradable

BOD/COD : BOD: 1,19 (BOD5)
COD: 2,23
BOD/COD: 53 %

12.3 Bioaccumulative potential

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)
Bioconcentration factor (BCF): 4
Remarks: Based on data from similar materials

Propan-2-ol:

Partition coefficient: n-octanol/water : log Pow: 0.05

12.4 Mobility in soil

No data available

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12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB).

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Assessment : PBT substance
vPvB substance

12.6 Endocrine disrupting properties

Product:

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

12.7 Other adverse effects

Components:

Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, ammonium salts:

Additional ecological information : Information given is based on data on the components and the ecotoxicology of similar products.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product	: Dispose of in accordance with local regulations. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities. Do not dispose of waste into sewer.
Contaminated packaging	: Empty containers should be taken to an approved waste handling site for recycling or disposal. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

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SECTION 14: Transport information

14.1 UN number or ID number

ADN	:	UN 1993
ADR	:	UN 1993
RID	:	UN 1993
IMDG	:	UN 1993
IATA	:	UN 1993

14.2 UN proper shipping name

ADN	:	FLAMMABLE LIQUID, N.O.S. (Propan-2-ol)
ADR	:	FLAMMABLE LIQUID, N.O.S. (Propan-2-ol)
RID	:	FLAMMABLE LIQUID, N.O.S. (Propan-2-ol)
IMDG	:	FLAMMABLE LIQUID, N.O.S. (Propan-2-ol, Reaction mass of mixed (3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) phosphates, am- monium salts)
IATA	:	Flammable liquid, n.o.s. (Propan-2-ol)

14.3 Transport hazard class(es)

	Class	Subsidiary risks
ADN	:	3
ADR	:	3
RID	:	3
IMDG	:	3
IATA	:	3

14.4 Packing group

ADN		
Packing group	:	III
Classification Code	:	F1
Hazard Identification Number	:	30
Labels	:	3
ADR		
Packing group	:	III
Classification Code	:	F1
Hazard Identification Number	:	30
Labels	:	3

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Tunnel restriction code : (D/E)

RID

Packing group : III
Classification Code : F1
Hazard Identification Number : 30
Labels : 3

IMDG

Packing group : III
Labels : 3
EmS Code : F-E, S-E

IATA (Cargo)

Packing instruction (cargo aircraft) : 366
Packing instruction (LQ) : Y344
Packing group : III
Labels : Flammable Liquids

IATA (Passenger)

Packing instruction (passenger aircraft) : 355
Packing instruction (LQ) : Y344
Packing group : III
Labels : Flammable Liquids

14.5 Environmental hazards

ADN

Environmentally hazardous : yes

ADR

Environmentally hazardous : yes

RID

Environmentally hazardous : yes

IMDG

Marine pollutant : yes

14.6 Special precautions for user

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

14.7 Maritime transport in bulk according to IMO instruments

Remarks : Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, : Conditions of restriction for the following entries should be considered:

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mixtures and articles (Annex XVII)

Number on list 3

Number on list 65: Diammonium
hydrogenorthophosphate, Ammoni-
um dihydrogen phosphate

Number on list 75: If you intend to
use this product as tattoo ink, please
contact your vendor.

Substance(s) or mixture(s) are listed
here according to their appearance
in the regulation, irrespective of their
use/purpose or the conditions of the
restriction. Please refer to the condi-
tions in corresponding Regulation to
determine whether an entry is appli-
cable to the placing on the market or
not.

REACH - Candidate List of Substances of Very High
Concern for Authorisation (Article 59). : Not applicable

Regulation (EU) No 2024/590 on substances that de-
plete the ozone layer : Not applicable

Regulation (EU) 2019/1021 on persistent organic pollu-
tants (recast) : Not applicable

Regulation (EU) No 649/2012 of the European Parlia-
ment and the Council concerning the export and import
of dangerous chemicals : Not applicable

REACH - List of substances subject to authorisation
(Annex XIV) : Not applicable

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

		Quantity 1	Quantity 2
H1	ACUTE TOXIC	5 t	20 t
E1	ENVIRONMENTAL HAZARDS	100 t	200 t
P5c	FLAMMABLE LIQUIDS	5,000 t	50,000 t

Other regulations:

Take note of Directive 94/33/EC on the protection of young people at work or stricter national
regulations, where applicable.

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15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Other information : Capstone™ and any associated logos are trademarks or copyrights of The Chemours Company FC, LLC.
Chemours™ and the Chemours Logo are trademarks of The Chemours Company.
Before use read Chemours safety information.
For further information contact the local Chemours office or nominated distributors.

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

Full text of H-Statements

H225 : Highly flammable liquid and vapour.
H319 : Causes serious eye irritation.
H330 : Fatal if inhaled.
H336 : May cause drowsiness or dizziness.
H373 : May cause damage to organs through prolonged or repeated exposure.
H410 : Very toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox. : Acute toxicity
Aquatic Chronic : Long-term (chronic) aquatic hazard
Eye Irrit. : Eye irritation
Flam. Liq. : Flammable liquids
STOT RE : Specific target organ toxicity - repeated exposure
STOT SE : Specific target organ toxicity - single exposure
2000/39/EC : Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
2004/37/EC : Europe. Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work
2006/15/EC : Europe. Indicative occupational exposure limit values
2017/164/EU : Europe. Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values
IE OEL : Ireland. List of Chemical Agents and Carcinogens with Occupational Exposure Limit Values - Code of Practice, Schedule 1 and 2
2000/39/EC / TWA : Limit Value - eight hours
2000/39/EC / STEL : Short term exposure limit
2004/37/EC / STEL : Short term exposure limit
2004/37/EC / TWA : Long term exposure limit
2006/15/EC / TWA : Limit Value - eight hours
2017/164/EU / STEL : Short term exposure limit
2017/164/EU / TWA : Limit Value - eight hours

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IE OEL / OELV - 8 hrs (TWA) : Occupational exposure limit value (8-hour reference period)
IE OEL / OELV - 15 min : Occupational exposure limit value (15-minute reference period)
(STEL) (STEL)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECL - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Classification of the mixture:

Flam. Liq. 3	H226
Acute Tox. 1	H330
Eye Irrit. 2	H319
STOT SE 3	H336
STOT RE 2	H373
Aquatic Chronic 1	H410

Classification procedure:

Based on product data or assessment
Expert judgement and weight of evidence determination.
Calculation method
Calculation method
Calculation method
Calculation method

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

IE / EN

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Annex: Exposure Scenarios

Table of Contents

Number	Title
ES1	Industrial use; Formulation [mixing] of preparations and/or re-packaging (SU10); Formulation [mixing] of preparations and/ or re-packaging (excluding alloys); Large user.; Coatings and paints, thinners, paint removers (PC9a).; Non-metal surface treatment products (PC15).; Washing and cleaning products (PC35).
ES2	Industrial use; Formulation [mixing] of preparations and/or re-packaging (SU10); Formulation [mixing] of preparations and/ or re-packaging (excluding alloys); Small user.; Coatings and paints, thinners, paint removers (PC9a).; Non-metal surface treatment products (PC15).; Washing and cleaning products (PC35).
ES3	professional use; Building and construction work (SU19); Coatings.
ES4	Consumer use; Building and construction work (SU19); Coatings.
ES5	Consumer use; Building and construction work (SU19); Coatings; Article service life.; Coatings and paints, thinners, paint removers (PC9a); Stone, plaster, cement, glass and ceramic articles (AC4).; Non-metal surface treatment products (PC15).

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ES 1: Industrial use; Formulation [mixing] of preparations and/or re-packaging (SU10); Formulation [mixing] of preparations and/ or re-packaging (excluding alloys); Large user.; Coatings and paints, thinners, paint removers (PC9a).; Non-metal surface treatment products (PC15).; Washing and cleaning products (PC35).

1.1. Title section

Exposure Scenario name	: Formulation & (re)packing of substances and mixtures, Large user
Structured Short Title	: Industrial use; Formulation [mixing] of preparations and/or re-packaging (SU10); Formulation [mixing] of preparations and/ or re-packaging (excluding alloys); Large user.; Coatings and paints, thinners, paint removers (PC9a).; Non-metal surface treatment products (PC15).; Washing and cleaning products (PC35).

Environment		
CS 1	Formulation & (re)packing of substances and mixtures, Large scale	ERC2
Worker		
CS 2	Material transfers	PROC8b
CS 3	Batch process, Mixing operations	PROC5
CS 4	Material transfers	PROC9
CS 5	Laboratory activities	PROC15

1.2. Conditions of use affecting exposure

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

Product (article) characteristics	
Covers concentrations up to 35 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual use rate (tonnes/year)	: 7.875 ton(s)/year
Maximum daily site tonnage (kg/day)	: 262.5 kg/day
Fraction of EU tonnage used in re-	: 1

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gion
Fraction of Regional tonnage used : 1 locally
Release type : Continuous release
Emission days : 30
Technical and organisational conditions and measures
Process designed to minimize releases to wastewater. Process designed to minimize releases to soil. Process designed to minimize releases to air.
Recovery and reuse of rinsate from containers, vats and equipment to eliminate substance release to waste water.
Limit release rate to waste water to (kg/day): 1.3 kg/day Worst case assumption
Conditions and measures related to sewage treatment plant
STP type : Municipal Sewage Treatment Plant STP sludge treatment : No application of sewage sludge to soil STP effluent : 2,000 m3/d
Conditions and measures related to treatment of waste (including article waste)
Waste treatment : Hazardous waste incineration
Other conditions affecting environmental exposure
Receiving surface water flow : 1,512,000 m3/d

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

Product (article) characteristics
Covers concentrations up to 35 %
Physical form of product : Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure
Amount per Day : 262.5 kg/day
Use frequency : Covers exposure up to 15 minutes/day

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Technical and organisational conditions and measures
Regular inspection and maintenance of equipment and machines Good natural ventilation
Reduce contact between product and air
Mass transfer rate
Used ART model. < 100 L/min
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 90 %
Other conditions affecting workers exposure
Body parts exposed : Both hands
Indoor or outdoor use : Indoor use
Room size : 300 m ³
Temperature : 25 °C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply
Wear suitable coveralls to prevent exposure to the skin.

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

Product (article) characteristics
Covers concentrations up to 35 %
Physical form of product : Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure
Amount per Day : 262.5 kg/day
Use frequency : Covers exposure up to 60 minutes/day
Technical and organisational conditions and measures
Regular inspection and maintenance of equipment and machines Good natural ventilation Ensure that the distance from worker to task is greater than 1 m.
Medium containment with receiving vessel docked or sealed to the source vessel to prevent direct contact with the product.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
For further specification, refer to section 8 of the SDS.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed : Both hands

Indoor or outdoor use : Indoor use

Room size : 300 m³

Temperature : 25 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Wear suitable coveralls to prevent exposure to the skin.

1.2.4. 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 7 %

Physical form of product : Liquid
Not volatile

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

Amount per Day : 262.5 kg/day

Use frequency : Covers exposure up to 240 minutes/day

Technical and organisational conditions and measures

Regular inspection and maintenance of equipment and machines
Good natural ventilation

Low containment using loose lids on vessels.
Inhalation - minimum efficiency of 90 %

Mass transfer rate

Used ART model. < 1,000 L/min

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
For further specification, refer to section 8 of the SDS.
Dermal - minimum efficiency of 90 %

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Other conditions affecting workers exposure	
Body parts exposed	: Both hands
Indoor or outdoor use	: Indoor use
Room size	: 300 m³
Temperature	: 25 °C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Wear suitable coveralls to prevent exposure to the skin.	

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

Product (article) characteristics	
Covers concentrations up to 35 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Amount per Day	: 262.5 kg/day
Use frequency	: Covers exposure up to 60 minutes/day
Technical and organisational conditions and measures	
Regular inspection and maintenance of equipment and machines Good natural ventilation	
Submerged loading.	
Reduce contact between product and air	
Mass transfer rate	
Used ART model. < 0.1 L/min	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 90 %	
Other conditions affecting workers exposure	
Body parts exposed	: Both hands
Indoor or outdoor use	: Indoor use

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Room size	: 30 m ³
Temperature	: 25 °C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Wear suitable coveralls to prevent exposure to the skin.	

1.3. Exposure estimation and reference to its source

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

Protection Target	Exposure estimate	RCR
Freshwater	0.000811 mg/L (ECETOC TRA environment v2.0)	0.9
Marine water	0.0000613 mg/L (ECETOC TRA environment v2.0)	0.7
Freshwater sediment	0.0043 mg/kg dry weight (ECETOC TRA environment v2.0)	0.9
Marine sediment	0.000325 mg/kg dry weight (ECETOC TRA environment v2.0)	0.7
Agricultural soil	< 0.0000018 mg/kg dry weight (ECETOC TRA environment v2.0)	< 0.001
Grassland	< 0.0000018 mg/kg dry weight (ECETOC TRA environment v2.0)	< 0.001
Sewage treatment plant	0.613 mg/L (ECETOC TRA environment v2.0)	0.006

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	short-term	< 0.009 mg/m ³ (ART v1.5)	0.03
inhalative	local	long-term	< 0.003 mg/m ³ (ART v1.5)	0.009
inhalative	systemic	long-term	< 0.003 mg/m ³ (ART v1.5)	0.1
dermal	systemic	long-term	0.24 mg/kg bw/day (ECETOC TRA)	0.2

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			worker v2.0)	
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1.3.3. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	short-term	0.004 mg/m ³ (ART v1.5)	0.01
inhalative	local	long-term	0.001 mg/m ³ (ART v1.5)	0.004
inhalative	systemic	long-term	0.001 mg/m ³ (ART v1.5)	0.02
dermal	systemic	long-term	0.48 mg/kg bw/day (ECETOC TRA worker v2.0)	0.4

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	short-term	< 0.027 mg/m ³ (ART v1.5)	0.1
inhalative	local	long-term	< 0.007 mg/m ³ (ART v1.5)	0.03
inhalative	systemic	long-term	< 0.007 mg/m ³ (ART v1.5)	0.2
dermal	systemic	long-term	0.048 mg/kg bw/day (ECETOC TRA worker v2.0)	0.04

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	short-term	< 0.004 mg/m ³ (ART v1.5)	0.01
inhalative	local	long-term	< 0.001 mg/m ³ (ART v1.5)	0.004
inhalative	systemic	long-term	< 0.001 mg/m ³ (ART v1.5)	0.02
dermal	systemic	long-term	0.012 mg/kg	0.01

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			bw/day (ECETOC TRA worker v2.0)	
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1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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ES 2: Industrial use; Formulation [mixing] of preparations and/or re-packaging (SU10); Formulation [mixing] of preparations and/ or re-packaging (excluding alloys); Small user.; Coatings and paints, thinners, paint removers (PC9a).; Non-metal surface treatment products (PC15).; Washing and cleaning products (PC35).

2.1. Title section

Exposure Scenario name	: Formulation & (re)packing of substances and mixtures, Small user
Structured Short Title	: Industrial use; Formulation [mixing] of preparations and/or re-packaging (SU10); Formulation [mixing] of preparations and/ or re-packaging (excluding alloys); Small user.; Coatings and paints, thinners, paint removers (PC9a).; Non-metal surface treatment products (PC15).; Washing and cleaning products (PC35).

Environment		
CS 1	Formulation & (re)packing of substances and mixtures, Small scale	ERC2
Worker		
CS 2	Material transfers	PROC8b
CS 3	Batch process, Mixing operations	PROC5
CS 4	Material transfers	PROC9
CS 5	Laboratory activities	PROC15

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 35 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual use rate (tonnes/year)	: 5.2 ton(s)/year
Maximum daily site tonnage (kg/day)	: 3.48 kg/day
Fraction of EU tonnage used in re-	: 0.1

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gion
Fraction of Regional tonnage used : 0.067 locally
Release type : Intermittent release
Emission days : 10
Technical and organisational conditions and measures
Process designed to minimize releases to wastewater. Process designed to minimize releases to soil. Process designed to minimize releases to air.
Recovery and reuse of rinsate from containers, vats and equipment to eliminate substance release to waste water.
Conditions and measures related to sewage treatment plant
STP type : Municipal Sewage Treatment Plant
STP sludge treatment : No application of sewage sludge to soil
STP effluent : 2,000 m3/d
Conditions and measures related to treatment of waste (including article waste)
Waste treatment : Hazardous waste incineration
Other conditions affecting environmental exposure
Receiving surface water flow : 18,000 m3/d

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

Product (article) characteristics
Covers concentrations up to 35 %
Physical form of product : Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure
Amount per Day : 10.5 kg/day
Use frequency : Covers exposure up to 60 minutes/day
Technical and organisational conditions and measures

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Regular inspection and maintenance of equipment and machines Good natural ventilation
Reduce contact between product and air
Mass transfer rate Used ART model. < 1 L/min
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 90 %
Other conditions affecting workers exposure
Body parts exposed : Both hands
Indoor or outdoor use : Indoor use
Room size : 30 m ³
Temperature : 25 °C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply
Wear suitable coveralls to prevent exposure to the skin.

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

Product (article) characteristics
Covers concentrations up to 35 %
Physical form of product : Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure
Amount per Day : 10.5 kg/day
Use frequency : Covers exposure up to 60 minutes/day
Technical and organisational conditions and measures
Regular inspection and maintenance of equipment and machines Good natural ventilation Ensure that the distance from worker to task is greater than 1 m.
Low containment using loose lids on vessels.
Conditions and measures related to personal protection, hygiene and health evaluation

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Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
For further specification, refer to section 8 of the SDS.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed	: Both hands
Indoor or outdoor use	: Indoor use
Room size	: 30 m ³
Temperature	: 25 °C

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Wear suitable coveralls to prevent exposure to the skin.

2.2.4. 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 7 %

Physical form of product	: Liquid
	: Not volatile

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

Amount per Day	: 10.5 kg/day
Use frequency	: Covers exposure up to 60 minutes/day

Technical and organisational conditions and measures

Regular inspection and maintenance of equipment and machines
Good natural ventilation
Ensure that the distance from worker to task is greater than 1 m.
Reduce contact between product and air

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
For further specification, refer to section 8 of the SDS.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Body parts exposed	: Both hands
Indoor or outdoor use	: Indoor use

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Room size	: 100 m³
Temperature	: 25 °C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Wear suitable coveralls to prevent exposure to the skin.	

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

Product (article) characteristics	
Covers concentrations up to 35 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Amount per Day	: 10.5 kg/day
Use frequency	: Covers exposure up to 15 minutes/day
Technical and organisational conditions and measures	
Regular inspection and maintenance of equipment and machines Good natural ventilation	
Reduce contact between product and air	
Submerged loading.	
Mass transfer rate	
Used ART model. < 0.1 L/min	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. For further specification, refer to section 8 of the SDS. Dermal - minimum efficiency of 90 %	
Other conditions affecting workers exposure	
Body parts exposed	: Both hands
Indoor or outdoor use	: Indoor use
Room size	: 30 m³
Temperature	: 25 °C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	

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Wear suitable coveralls to prevent exposure to the skin.

2.3. Exposure estimation and reference to its source

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

Protection Target	Exposure estimate	RCR
Freshwater	0.000814 mg/L (ECETOC TRA environment v2.0)	0.9
Marine water	0.000814 mg/L (ECETOC TRA environment v2.0)	0.9
Freshwater sediment	0.00432 mg/kg dry weight (ECETOC TRA environment v2.0)	0.9
Marine sediment	0.000432 mg/kg dry weight (ECETOC TRA environment v2.0)	0.9
Agricultural soil	< 0.0000001 mg/kg dry weight (ECETOC TRA environment v2.0)	< 0.001
Grassland	< 0.0000001 mg/kg dry weight (ECETOC TRA environment v2.0)	< 0.001
Sewage treatment plant	0.00814 mg/L (ECETOC TRA environment v2.0)	< 0.001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	short-term	< 0.012 mg/m ³ (ART v1.5)	0.04
inhalative	local	long-term	< 0.003 mg/m ³ (ART v1.5)	0.01
inhalative	systemic	long-term	< 0.003 mg/m ³ (ART v1.5)	0.07
dermal	systemic	long-term	0.24 mg/kg bw/day (ECETOC TRA worker v2.0)	0.20

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
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		tor	mate	
inhalative	local	short-term	< 0.033 mg/m ³ (ART v1.5)	0.1
inhalative	local	long-term	< 0.009 mg/m ³ (ART v1.5)	0.03
inhalative	systemic	long-term	< 0.009 mg/m ³ (ART v1.5)	0.19
dermal	systemic	long-term	0.48 mg/kg bw/day (ECETOC TRA worker v2.0)	0.4

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	short-term	< 0.003 mg/m ³ (ART v1.5)	0.007
inhalative	local	long-term	< 0.001 mg/m ³ (ART v1.5)	0.002
inhalative	systemic	long-term	< 0.001 mg/m ³ (ART v1.5)	0.01
dermal	systemic	long-term	0.048 mg/kg bw/day (ECETOC TRA worker v2.0)	0.04

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	short-term	< 0.001 mg/m ³ (ART v1.5)	0.003
inhalative	local	long-term	< 0.001 mg/m ³ (ART v1.5)	0.001
inhalative	systemic	long-term	< 0.001 mg/m ³ (ART v1.5)	0.01
dermal	systemic	long-term	0.012 mg/kg bw/day (ECETOC TRA worker v2.0)	0.01

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

For further information, please contact sds-support@chemours.com.

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ES 3: professional use; Building and construction work (SU19); Coatings.

3.1. Title section

Exposure Scenario name	: professional use, Coatings
Structured Short Title	: professional use; Building and construction work (SU19); Coatings.

Environment		
CS 1	Professional, Coatings	ERC8f
Worker		
CS 2	Material transfers, Non-dedicated facility	PROC8a
CS 3	Rolling, Brushing	PROC10
CS 4	Spraying	PROC11

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Widespread use leading to inclusion into/onto article (outdoor) (ERC8f)

Product (article) characteristics	
Covers concentrations up to 0.1 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual amount for wide disperse uses	: 13 tonnes/year
Release type	: Continuous release
Emission days	: 365
Conditions and measures related to sewage treatment plant	
STP type	: Municipal Sewage Treatment Plant
STP sludge treatment	: Controlled application of sewage sludge to agricultural soil
STP effluent	: 2,000 m3/d

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Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: Dispose of waste product or used containers according to local regulations. Landfill
Other conditions affecting environmental exposure	
Receiving surface water flow	: 18,000 m3/d

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

Product (article) characteristics	
Covers concentrations up to 0.1 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Amount per use	: 0.05 kg/day
Use frequency	: Covers exposure up to 15 minutes/day
Use frequency	: Covers exposure up to 5 days per week
Low application rate (0.03 - 0.3 l/minute)	
Technical and organisational conditions and measures	
No formation of significant aerosols or splashes Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Other conditions affecting workers exposure	
Body parts exposed	: Both hands Body
Indoor or outdoor use	: Covers indoor and outdoor use.

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

Product (article) characteristics	
Covers concentrations up to 0.1 %	
Physical form of product	: Liquid Not volatile

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Amount used (or contained in articles), frequency and duration of use/exposure	
Amount per use	: 0.05 kg/day
Use frequency	: Covers exposure up to 8 hours/day
Use frequency	: Covers exposure up to 5 days per week
Low application rate (0.03 - 0.3 l/minute)	
Technical and organisational conditions and measures	
No formation of significant aerosols or splashes Use long handled brushes and rollers. Downward application Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Other conditions affecting workers exposure	
Body parts exposed	: Both hands Body
Indoor or outdoor use	: Covers indoor and outdoor use.

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

Product (article) characteristics	
Covers concentrations up to 0.1 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Amount per use	: 0.05 kg/day
Use frequency	: Covers exposure up to 8 hours/day
Use frequency	: Covers exposure up to 5 days per week
Low application rate (0.03 - 0.3 l/minute)	
Technical and organisational conditions and measures	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).	
Other conditions affecting workers exposure	
Body parts exposed	: Both hands Body
Indoor or outdoor use	: Covers indoor and outdoor use.

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3.3. Exposure estimation and reference to its source

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

Protection Target	Exposure estimate	RCR
Freshwater	< 0.0000047 mg/L (ECETOC TRA environment v2.0)	0.005
Marine water	< 0.0000005 mg/L (ECETOC TRA environment v2.0)	0.005
Freshwater sediment	0.0000647 mg/kg dry weight (ECETOC TRA environment v2.0)	0.013
Marine sediment	0.0000064 mg/kg dry weight (ECETOC TRA environment v2.0)	0.013
Agricultural soil	< 0.0000001 mg/kg dry weight (ECETOC TRA environment v2.0)	< 0.001
Sewage treatment plant	0.0000379 mg/L (ECETOC TRA environment v2.0)	< 0.001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.01 mg/kg bw/day (ECETOC TRA worker v2.0)	0.008

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0.03 mg/kg bw/day (ECETOC TRA worker v2.0)	0.025

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
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inhalative	local	short-term	0.02 mg/m ³ (ECETOC TRA worker v2.0)	0.07
inhalative	local	long-term	0.005 mg/m ³ (ECETOC TRA worker v2.0)	0.02
inhalative	systemic	long-term	0.005 mg/m ³ (ECETOC TRA worker v2.0)	0.1
dermal	systemic	long-term	0.01 mg/kg bw/day (ECETOC TRA worker v2.0)	0.008

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

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ES 4: Consumer use; Building and construction work (SU19); Coatings.

4.1. Title section

Exposure Scenario name	: Consumer use, Coatings
Structured Short Title	: Consumer use; Building and construction work (SU19); Coatings.

Environment		
CS 1	Consumer use, Coatings	ERC8f
Consumer		
CS 2	Consumer, Rolling, Brushing, Spraying	PC9a, PC15, AC4

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Widespread use leading to inclusion into/onto article (outdoor) (ERC8f)

Product (article) characteristics	
Covers concentrations up to 0.1 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Amount per use	: 13 tonnes/year
Release type	: Continuous release
Emission days	: 365
Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: Dispose of waste product or used containers according to local regulations. Landfill
Other conditions affecting environmental exposure	
Receiving surface water flow	: 18,000 m3/d
Indoor or outdoor use	: Covers indoor and outdoor use.

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4.2.2. Control of consumer exposure: Coatings and paints, thinners, paint removers (PC9a) / Non-metal surface treatment products (PC15) Stone, plaster, cement, glass and ceramic articles (AC4)

Product (article) characteristics	
Covers concentrations up to 0.1 %	
Physical form of product	: Liquid Not volatile
Amount used (or contained in articles), frequency and duration of use/exposure	
Amounts used	: 3000 g/event
Use frequency	: Covers exposure up to 2 event(s)/year
Use frequency	: Covers exposure up to 0.42 hours/day
Conditions and measures related to personal protection, hygiene and health evaluation	
Do not ingest. If swallowed then seek immediate medical assistance. Avoid contact with skin and eyes. Keep away from children.	
Other conditions affecting consumers exposure	
Body parts exposed	: Assumes that potential dermal contact is limited to hands.
Indoor or outdoor use	: Covers indoor and outdoor use.
Room size	: 34 m ³
Ventilation rate	: 1.5

4.3. Exposure estimation and reference to its source

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

Protection Target	Exposure estimate	RCR
Freshwater	< 0.0000047 mg/L (ECETOC TRA environment v2.0)	0.005
Marine water	< 0.0000005 mg/L (ECETOC TRA environment v2.0)	0.005
Freshwater sediment	0.0000647 mg/kg dry weight (ECETOC TRA environment v2.0)	0.013

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Marine sediment	0.0000064 mg/kg dry weight (ECETOC TRA environment v2.0)	0.013
Agricultural soil	< 0.0000001 mg/kg dry weight (ECETOC TRA environment v2.0)	< 0.001
Sewage treatment plant	0.0000379 mg/L (ECETOC TRA environment v2.0)	< 0.001

4.3.2. Consumer exposure: Coatings and paints, thinners, paint removers (PC9a) / Non-metal surface treatment products (PC15) Stone, plaster, cement, glass and ceramic articles (AC4)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	short-term	0.016 mg/m ³ (ConsExpo)	0.2
inhalative	local	long-term	0.005 mg/m ³ (ConsExpo)	0.05
inhalative	systemic	long-term	0.005 mg/m ³ (ConsExpo)	0.5
dermal	systemic	long-term	0.022 mg/kg bw/day (ConsExpo)	0.04

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

For further information, please contact sds-support@chemours.com.

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ES 5: Consumer use; Building and construction work (SU19); Coatings; Article service life.; Coatings and paints, thinners, paint removers (PC9a); Stone, plaster, cement, glass and ceramic articles (AC4).; Non-metal surface treatment products (PC15).

5.1. Title section

Exposure Scenario name	: Consumer use, Coatings, Article service life
Structured Short Title	: Consumer use; Building and construction work (SU19); Coatings; Article service life.; Coatings and paints, thinners, paint removers (PC9a); Stone, plaster, cement, glass and ceramic articles (AC4).; Non-metal surface treatment products (PC15).

Environment		
CS 1	Consumer, Coatings, Article service life	ERC10a
Consumer		
CS 2	Coatings, Article service life	PC9a, PC15, AC4

5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Widespread use of articles with low release (outdoor) (ERC10a)

Product (article) characteristics	
Physical form of product	: Solid surface layer coating
Amount used (or contained in articles), frequency and duration of use/exposure	
Annual amount supplied into the consumer use(s)	: 13000 kg
Release type	: Continuous release
Emission days	: 365
Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: Dispose of waste product or used containers according to local regulations. Landfill

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Other conditions affecting environmental exposure

Receiving surface water flow	:	18,000 m3/d
Indoor or outdoor use	:	Covers indoor and outdoor use.

5.2.2. Control of consumer exposure: Coatings and paints, thinners, paint removers (PC9a) / Non-metal surface treatment products (PC15) Stone, plaster, cement, glass and ceramic articles (AC4)

Product (article) characteristics

Physical form of product	:	Solid surface layer coating
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Amount used (or contained in articles), frequency and duration of use/exposure

Amount per Use	:	0.02 mg/cm2
Use frequency	:	Covers exposure up to 24 hours/day
Duration	:	Covers exposure up to 3 yr

Other conditions affecting consumers exposure

Body parts exposed	:	Palms of both hands (480 cm2)
Indoor or outdoor use	:	Indoor use

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Widespread use of articles with low release (outdoor) (ERC10a)

Protection Target	Exposure estimate	RCR
Freshwater	0.0000119 mg/L (ECETOC TRA environment v2.0)	0.01
Marine water	< 0.0000012 mg/L (ECETOC TRA environment v2.0)	0.01
Freshwater sediment	0.000165 mg/kg dry weight (ECETOC TRA environment v2.0)	0.03
Marine sediment	0.0000165 mg/kg dry weight (ECETOC TRA environment v2.0)	0.03
Agricultural soil	0.0000129 mg/kg dry weight (ECETOC TRA environment v2.0)	< 0.001

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Sewage treatment plant	0.000111 mg/L (ECETOC TRA environment v2.0)	< 0.001
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5.3.2. Consumer exposure: Coatings and paints, thinners, paint removers (PC9a) / Non-metal surface treatment products (PC15) Stone, plaster, cement, glass and ceramic articles (AC4)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	< 0.001 mg/kg bw/day (ConsExpo)	< 0.01
oral	systemic	long-term	< 0.001 mg/kg bw/day (ConsExpo)	0.01

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

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