



**Safety Data Sheet dated 23/9/2024, version 13**

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

- 1.1. Product identifier  
Mixture identification:  
Trade name: LAVAVETRI DP1 -45°C  
Trade code: 8402
- 1.2. Relevant identified uses of the substance or mixture and uses advised against  
Recommended use:  
Windscreen detergent  
Uses advised against:  
Strictly adhere to the recommended uses.
- 1.3. Details of the supplier of the safety data sheet  
Supplier:  
Arexons S.p.A.  
via Antica di Cassano, 23, 20063  
Cernusco sul Naviglio (MI), Italy  
Arexons S.p.A.  
Tel. +39 (0)2/924361 - Fax +39 (0)2/92436306  
Competent person responsible for the safety data sheet:  
arexons@arexons.it
- 1.4. Emergency telephone number  
Arexons S.p.A.  
Tel. +39 (0)2/924361 - Fax +39 (0)2/92436306  
In England and Wales: NHS 111 - dial 111  
In Scotland: NHS 24 - dial 111  
In Ireland: emergency number 112  
In South Africa: Poison Information Helpline 0861 555 777  
In Malta: emergency number 112

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**SECTION 2: Hazards identification**

- 2.1. Classification of the substance or mixture  
EC regulation criteria 1272/2008 (CLP):  
⚠ Danger, Flam. Liq. 2, Highly flammable liquid and vapour.  
⚠ Warning, Eye Irrit. 2, Causes serious eye irritation.  
Adverse physicochemical, human health and environmental effects:  
No other hazards
- 2.2. Label elements  
Hazard pictograms:



Danger

- Hazard statements:  
H225 Highly flammable liquid and vapour.  
H319 Causes serious eye irritation.

- Precautionary statements:  
P101 If medical advice is needed, have product container or label at hand.  
P102 Keep out of reach of children.  
P103 Read carefully and follow all instructions.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

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P370+P378 In case of fire: Use foam for alcohols to extinguish.

P403+P235 Store in a well-ventilated place. Keep cool.

P501 Dispose of contents/container in accordance with applicable regulations.

Special Provisions:

PACK2 The packing must have tactile indications of danger for blind people.

Special provisions according to Annex XVII of REACH and subsequent amendments:

None

Regulation (EC) nr 648/2004 (detergents).

2.3. Other hazards

No PBT, vPvB or endocrine disruptor substances present in concentration  $\geq 0.1\%$

Other Hazards:

No other hazards

## SECTION 3: Composition/information on ingredients

3.1. Substances

N.A.

3.2. Mixtures

Hazardous components within the meaning of the CLP regulation and related classification:

stta	Name	Ident. Number	Classification
$\geq 50\%$ - $< 60\%$	ethanol	CAS: 64-17-5 EC: 200-578-6 REACH No.: 01-2119457610-43	<div> <div>2.6/2 Flam. Liq. 2 H225</div> <div>3.3/2 Eye Irrit. 2 H319</div> <div>Specific Concentration Limits: C <math>\geq 50\%</math>: Eye Irrit. 2 H319</div> </div>
$\geq 5\%$ - $< 7\%$	ethanediol; ethylene glycol	Index number: 603-027-00-1 CAS: 107-21-1 EC: 203-473-3 REACH No.: 01-2119456816-28	<div> <div>3.1/4/Oral Acute Tox. 4 H302</div> <div>3.9/2 STOT RE 2 H373 (kidneys) (Oral)</div> </div>
$\geq 1\%$ - $< 2\%$	propan-2-ol; isopropyl alcohol; isopropanol	Index number: 603-117-00-0 CAS: 67-63-0 EC: 200-661-7 REACH No.: 01-2119457558-25	<div> <div>2.6/2 Flam. Liq. 2 H225</div> <div>3.3/2 Eye Irrit. 2 H319</div> <div>3.8/3 STOT SE 3 H336</div> </div>
$\geq 0,5\%$ - $< 1\%$	butanone; ethyl methyl ketone	Index number: 606-002-00-3 CAS: 78-93-3 EC: 201-159-0 REACH No.: 01-2119457290-43	<div> <div>2.6/2 Flam. Liq. 2 H225</div> <div>3.3/2 Eye Irrit. 2 H319</div> <div>3.8/3 STOT SE 3 H336</div> <div>EUH066</div> </div>
$\geq 0,05\%$ - $< 0,1\%$	2-methylpropan-2-ol; tert-butyl alcohol	CAS: 75-65-0 EC: 200-889-7 REACH No.: 01-	<div> <div>2.6/2 Flam. Liq. 2 H225</div> <div>3.1/4/Inhal Acute Tox. 4 H332</div> <div>3.3/2 Eye Irrit. 2 H319</div> </div>

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		2119444321 -51	⚠ 3.8/3 STOT SE 3 H335
>= 0,001% - < 0, 005%	sodium hydroxide; caustic soda	Index number: 011-002-00-6 CAS: 1310-73-2 EC: 215-185-5 REACH No.: 02- 2119457892 -27	⚠ 2.16/1 Met. Corr. 1 H290 ⚠ 3.2/1A Skin Corr. 1A H314 ⚠ 3.3/1 Eye Dam. 1 H318 Specific Concentration Limits: C >= 5%: Skin Corr. 1A H314 2% <= C < 5%: Skin Corr. 1B H314 0,5% <= C < 2%: Skin Irrit. 2 H315 0,5% <= C < 2%: Eye Irrit. 2 H319

#### SECTION 4: First aid measures

##### 4.1. Description of first aid measures

###### In case of skin contact:

Immediately take off all contaminated clothing.

Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap.

Wash thoroughly the body (shower or bath).

Remove contaminated clothing immediately and dispose off safely.

After contact with skin, wash immediately with soap and plenty of water.

###### In case of eyes contact:

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an ophthalmologist immediately.

Protect uninjured eye.

###### In case of Ingestion:

Do not under any circumstances induce vomiting. OBTAIN A MEDICAL EXAMINATION IMMEDIATELY.

###### In case of Inhalation:

Remove casualty to fresh air and keep warm and at rest.

##### 4.2. Most important symptoms and effects, both acute and delayed

None

##### 4.3. Indication of any immediate medical attention and special treatment needed

In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Treatment:

None

#### SECTION 5: Firefighting measures

##### 5.1. Extinguishing media

Appropriate Extinguishing Media:

To carbon dioxide.

To dust.

Foam for alcohols

Water spray.

Not Recommended Extinguishing Media:

Do not use direct water jets.

##### 5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

##### 5.3. Advice for firefighters

Normal fire-fighting clothing, such as an open-circuit compressed air breathing apparatus (EN 137), flame-resistant suit (EN469), flame-resistant gloves (EN 659) and firefighter's boots (HO A29 or A30).



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## **SECTION 6: Accidental release measures**

- 6.1. Personal precautions, protective equipment and emergency procedures
  - Wear personal protection equipment.
  - Remove all sources of ignition.
  - Remove persons to safety.
  - See protective measures under point 7 and 8.
- 6.2. Environmental precautions
  - Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
  - Retain contaminated washing water and dispose it.
  - In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.
  - Suitable material for taking up: absorbing material, organic, sand
- 6.3. Methods and material for containment and cleaning up
  - For cleaning up:
    - Avoid flame and/or spark near leak and produced waste. Do not smoke. In case of large spills dike,
    - absorb and shovel up into suitable containers for disposal. Contain small spills with absorbent material.
    - Put dirty material in suitable container. Dispose of dirty material in accordance with local or national regulations.
- 6.4. Reference to other sections
  - See also section 8 and 13

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## **SECTION 7: Handling and storage**

- 7.1. Precautions for safe handling
  - Avoid contact with skin and eyes, inhalation of vapours and mists.
  - Don't use empty container before they have been cleaned.
  - Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
  - See also section 8 for recommended protective equipment.
  - Advice on general occupational hygiene:
    - Contaminated clothing should be changed before entering eating areas.
    - Do not eat or drink while working.
- 7.2. Conditions for safe storage, including any incompatibilities
  - LGK class = 3
  - Only store in the original container.
  - Always keep in a well ventilated place.
  - Store at below 50 °C. Keep away from unguarded flame and heat sources. Avoid direct exposure to sunlight.
  - Keep away from unguarded flame, sparks, and heat sources. Avoid direct exposure to sunlight.
  - Keep away from food, drink and feed.
  - None in particular.
  - Instructions as regards storage premises:
    - Cool and adequately ventilated.
- 7.3. Specific end use(s)
  - None in particular

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## **SECTION 8: Exposure controls/personal protection**

- 8.1. Control parameters
  - ethanol - CAS: 64-17-5
    - ACGIH - STEL: 1000 ppm - Notes: A3 - URT irr
  - ethanediol; ethylene glycol - CAS: 107-21-1
    - EU - TWA(8h): 52 mg/m<sup>3</sup>, 20 ppm - STEL: 104 mg/m<sup>3</sup>, 40 ppm - Notes: Skin

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ACGIH - STEL: 10 mg/m<sup>3</sup> - Notes: (I, H), A4 - URT irr  
propan-2-ol; isopropyl alcohol; isopropanol - CAS: 67-63-0  
ACGIH - TWA(8h): 200 ppm - STEL: 400 ppm - Notes: A4, BEI - Eye and URT irr, CNS impair  
butanone; ethyl methyl ketone - CAS: 78-93-3  
20101.13 - TWA(8h): 590 mg/m<sup>3</sup>, 200 ppm - STEL(): 885 mg/m<sup>3</sup>, 300 ppm  
EU - TWA(8h): 600 mg/m<sup>3</sup>, 200 ppm - STEL: 900 mg/m<sup>3</sup>, 300 ppm  
2-methylpropan-2-ol; tert-butyl alcohol - CAS: 75-65-0  
ACGIH - TWA(8h): 100 ppm - Notes: A4 - CNS impair  
sodium hydroxide; caustic soda - CAS: 1310-73-2  
20101.10 - TWA: 2 mg/m<sup>3</sup>  
ACGIH - STEL: Ceiling 2 mg/m<sup>3</sup> - Notes: URT, eye, and skin irr

#### DNEL Exposure Limit Values

ethanol - CAS: 64-17-5

Worker Professional: 1900 mg/m<sup>3</sup> - Exposure: Human Inhalation - Frequency: Short Term (acute)

Worker Professional: 950 mg/m<sup>3</sup> - Exposure: Human Inhalation - Frequency: Long Term, systemic effects

Worker Professional: 343 mg/kg - Exposure: Human Dermal - Frequency: Long Term, systemic effects

ethanediol; ethylene glycol - CAS: 107-21-1

Worker Professional: 35 mg/m<sup>3</sup> - Consumer: 7 mg/m<sup>3</sup> - Exposure: Human Inhalation

Worker Professional: 106 mg/kg - Consumer: 53 mg/kg - Exposure: Human Dermal

propan-2-ol; isopropyl alcohol; isopropanol - CAS: 67-63-0

Consumer: 26 mg/kg - Exposure: Human Oral - Frequency: Long Term, systemic effects

Worker Professional: 500 mg/m<sup>3</sup> - Consumer: 89 mg/m<sup>3</sup> - Exposure: Human Inhalation - Frequency: Long Term, systemic effects

Worker Professional: 880 mg/kg - Consumer: 319 mg/kg - Exposure: Human Dermal - Frequency: Long Term, systemic effects

butanone; ethyl methyl ketone - CAS: 78-93-3

Consumer: 31 mg/kg - Exposure: Human Oral - Frequency: Long Term, systemic effects

Worker Professional: 600 mg/m<sup>3</sup> - Consumer: 106 mg/m<sup>3</sup> - Exposure: Human Inhalation - Frequency: Long Term, systemic effects

Worker Professional: 1161 mg/kg - Consumer: 412 mg/kg - Exposure: Human Dermal - Frequency: Long Term, systemic effects

sodium hydroxide; caustic soda - CAS: 1310-73-2

Worker Professional: 1 mg/m<sup>3</sup> - Consumer: 1 mg/l - Exposure: Human Inhalation -

Frequency: Long Term, local effects

#### PNEC Exposure Limit Values

ethanol - CAS: 64-17-5

Target: Fresh Water - Value: 0.96 mg/l

Target: Marine water - Value: 0.79 mg/l

Target: Freshwater sediments - Value: 3.6 mg/kg

Target: Marine water sediments - Value: 2.9 mg/kg

Target: 09 - Value: 580 mg/l

ethanediol; ethylene glycol - CAS: 107-21-1

Target: Fresh Water - Value: 10 mg/l

Target: Marine water - Value: 1 mg/l

Target: Freshwater sediments - Value: 37 mg/kg

Target: Soil (agricultural) - Value: 1.53 mg/kg

propan-2-ol; isopropyl alcohol; isopropanol - CAS: 67-63-0

Target: Fresh Water - Value: 140.9 mg/l

Target: Marine water - Value: 140.9 mg/l

Target: Freshwater sediments - Value: 552 mg/kg

Target: Marine water sediments - Value: 552 mg/kg

Target: Soil (agricultural) - Value: 28 mg/kg

butanone; ethyl methyl ketone - CAS: 78-93-3

Target: Fresh Water - Value: 55.8 mg/l

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Target: Marine water - Value: 55.8 mg/l  
Target: Freshwater sediments - Value: 284.74 mg/l  
Target: Marine water sediments - Value: 287.7 mg/l  
Target: 09 - Value: 709 mg/l

#### 8.2. Exposure controls

Eye protection:

Safety goggles.

Compliant with EN 166

Protection for skin:

protective clothing

Protection for hands:

Nitrile or Viton gloves.

Compliant with EN 374.

Thickness: Cuff 0.10 mm; Palm 0.12 mm; Fingers 0.145 mm

Respiratory protection:

Use a suitable respiratory protection device.

Thermal Hazards:

None

Environmental exposure controls:

None

Appropriate engineering controls:

None

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Properties	Value	Method:	Notes:
Physical state:	Liquid	--	--
Colour:	Light blue	--	--
Odour:	Characteristic	--	--
Melting point/freezing point:	N.A.	--	--
Boiling point or initial boiling point and boiling range:	82°C	ASTM D2887	--
Flammability:	Flam. Liq. 2, H225	--	--
Lower and upper explosion limit:	N.A.	--	--
Flash point:	22,5 °C	IP 170	--
Auto-ignition temperature:	N.A.	--	--
Decomposition temperature:	N.A.	--	--
pH:	10.5	ASTM D1287	--
Kinematic viscosity:	N.A.	--	--
Solubility in water:	N.A.	--	--

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Solubility in oil:	N.A.	--	--
Partition coefficient n-octanol/water (log value):	N.A.	--	--
Vapour pressure:	N.A.	--	--
Density and/or relative density:	0.904 g/cm3	ASTM D 4052-96	--
Relative vapour density:	N.A.	--	--
Particle characteristics:			
Particle size:	N.A.	--	--

- 9.2. Other information  
No other relevant information

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## SECTION 10: Stability and reactivity

- 10.1. Reactivity  
Stable under normal conditions
- 10.2. Chemical stability  
Stable at normal ambient temperatures and when used as recommended.
- 10.3. Possibility of hazardous reactions  
It may generate flammable gases on contact with dithiocarbamates, mercaptans and other organic sulphides, elementary metals (alkalis, alkaline earth, powder alloys, vapours), and powerful reducing agents.  
It may generate toxic gases on contact with inorganic fluorides, halogenated organic substances, sulphides, nitrides, nitriles, organophosphates, and powerful oxidising agents.  
It may catch fire on contact with dithiocarbamates, elementary metals (alkali, alkaline earth, powder alloys, vapours, sheets or bars), and nitrides.
- 10.4. Conditions to avoid  
Excessive heat.
- 10.5. Incompatible materials  
Avoid contact with combustible materials. The product could catch fire.
- 10.6. Hazardous decomposition products  
None.

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## SECTION 11: Toxicological information

- 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008  
Toxicological information of the product:  
LAVAVETRI INVERNO DP1 -45°C ML. 500
- a) acute toxicity  
Not classified  
Based on available data, the classification criteria are not met
  - b) skin corrosion/irritation  
Not classified  
Based on available data, the classification criteria are not met
  - c) serious eye damage/irritation  
The product is classified: Eye Irrit. 2 H319
  - d) respiratory or skin sensitisation  
Not classified  
Based on available data, the classification criteria are not met
  - e) germ cell mutagenicity



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- Not classified  
Based on available data, the classification criteria are not met
- f) carcinogenicity  
Not classified  
Based on available data, the classification criteria are not met
- g) reproductive toxicity  
Not classified  
Based on available data, the classification criteria are not met
- h) STOT-single exposure  
Not classified  
Based on available data, the classification criteria are not met
- i) STOT-repeated exposure  
Not classified  
Based on available data, the classification criteria are not met
- j) aspiration hazard  
Not classified  
Based on available data, the classification criteria are not met
- Toxicological information of the main substances found in the product:
- ethanol - CAS: 64-17-5
- d) respiratory or skin sensitisation:  
Test: Skin Sensitization - Route: Skin Negative
- e) germ cell mutagenicity:  
Test: Genotoxicity - Species: vitro Negative
- f) carcinogenicity:  
Test: Carcinogeneticity - Species: mam Positive
- g) reproductive toxicity:  
Test: NOAEL - Route: Inhalation - Species: Rat = 1600 Ppm
- ethanediol; ethylene glycol - CAS: 107-21-1
- a) acute toxicity:  
Test: LC50 - Route: Oral - Species: Rat 7712 mg/kg  
Test: LC50 - Route: Inhalation - Species: Rat 2.5 mg/l - Duration: 6h  
Test: LD50 - Route: Skin - Species: Mouse 3500 mg/kg
- propan-2-ol; isopropyl alcohol; isopropanol - CAS: 67-63-0
- a) acute toxicity:  
Test: LD50 - Route: Oral - Species: Rat 4396-5500 mg/kg  
Test: LD50 - Route: Skin - Species: Rabbit 12870 mg/kg  
Test: LC50 - Route: Inhalation - Species: Rat 72.6 mg/l - Duration: 4h
- butanone; ethyl methyl ketone - CAS: 78-93-3
- a) acute toxicity:  
Test: LD50 - Route: Oral - Species: Rat = 2737 mg/kg  
Test: LD50 - Route: Skin - Species: Rabbit = 6480 mg/kg  
Test: LD50 - Route: Inhalation - Species: Rat = 23.5 mg/m3 - Duration: 4h
- propan-2-ol; isopropyl alcohol; isopropanol - CAS: 67-63-0
- OBSERVATIONS ON HUMAN SUBJECTS:  
propan-1-ol (propyl alcohol): oral, woman (LDLo): 5700 mg/kg propan-2-ol (isopropyl alcohol): oral, man (LDLo): 5272 mg/kg
- 11.2. Information on other hazards  
Endocrine disrupting properties:  
No endocrine disruptor substances present in concentration  $\geq 0.1\%$

## SECTION 12: Ecological information

- 12.1. Toxicity  
Adopt good working practices, so that the product is not released into the environment.
- ethanol - CAS: 64-17-5
- a) Aquatic acute toxicity:  
Endpoint: LC50 - Species: Fish 14.2 GL - Duration h: 96



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- Endpoint: LC50 - Species: Daphnia 29.6 GL - Duration h: 24  
Endpoint: EC50 - Species: Algae 19000 mg/l - Duration h: 96  
Endpoint: EC50 - Species: batteri 39.5 GL - Duration h: 4
- b) Aquatic chronic toxicity:  
Endpoint: EC50 - Species: Fish 14536 mg/l - Duration h: 200  
Endpoint: LC50 - Species: Daphnia 9248 mg/l - Duration h: 68  
ethanediol; ethylene glycol - CAS: 107-21-1
- a) Aquatic acute toxicity:  
Endpoint: LC50 - Species: Fish 49-72.86 GL - Duration h: 96  
Endpoint: EC50 - Species: Daphnia 100 mg/l - Duration h: 48  
Endpoint: LC50 - Species: Daphnia 74.448 GL - Duration h: 242  
Endpoint: EC0 - Species: Daphnia 100 mg/l - Duration h: 48  
Endpoint: CE4 - Species: Algae 10.94 GL - Duration h: 96
- b) Aquatic chronic toxicity:  
Endpoint: NOEC - Species: Fish 49 mg/l - Duration h: 504  
Endpoint: LC50 - Species: Fish 1.5 GL - Duration h: 504  
Endpoint: NOEC - Species: Daphnia 8.59-24 mg/l - Duration h: 168  
Endpoint: NOEC - Species: Algae 1000 mg/l - Duration h: 72  
butanone; ethyl methyl ketone - CAS: 78-93-3
- a) Aquatic acute toxicity:  
Endpoint: LC50 - Species: Fish = 3220 mg/l - Duration h: 96  
Endpoint: EC50 - Species: Daphnia = 5091 mg/l - Duration h: 96  
sodium hydroxide; caustic soda - CAS: 1310-73-2
- a) Aquatic acute toxicity:  
Endpoint: EC50 - Species: Daphnia 40.4 mg/l - Duration h: 48
- 12.2. Persistence and degradability  
None  
ethanediol; ethylene glycol - CAS: 107-21-1  
Biodegradability: Readily biodegradable - Test: OECD TG 301 A - Duration: .10gg - %: 90-10  
butanone; ethyl methyl ketone - CAS: 78-93-3  
Biodegradability: Readily biodegradable
- 12.3. Bioaccumulative potential  
ethanediol; ethylene glycol - CAS: 107-21-1  
Bioaccumulation: Not bioaccumulative  
propan-2-ol; isopropyl alcohol; isopropanol - CAS: 67-63-0  
Test: Kow - Partition coefficient 0.05  
butanone; ethyl methyl ketone - CAS: 78-93-3  
Test: Kow - Partition coefficient 0.3  
sodium hydroxide; caustic soda - CAS: 1310-73-2  
Bioaccumulation: Not bioaccumulative
- 12.4. Mobility in soil  
ethanediol; ethylene glycol - CAS: 107-21-1  
Mobility in soil: Mobile  
sodium hydroxide; caustic soda - CAS: 1310-73-2  
Mobility in soil: Not mobile
- 12.5. Results of PBT and vPvB assessment  
vPvB Substances: None - PBT Substances: None
- 12.6. Endocrine disrupting properties  
No endocrine disruptor substances present in concentration  $\geq 0.1\%$
- 12.7. Other adverse effects  
None

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## SECTION 13: Disposal considerations

- 13.1. Waste treatment methods  
Recover, if possible. Send to authorised disposal plants or for incineration under controlled conditions. In so doing, comply with the local and national regulations currently in force.

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#### Additional disposal information:

"Use in accordance with good working practices, avoiding dispersal in the environment.

Do not discharge into drains, ground water or water courses. Comply with current legislation on the protection of water and soil from pollution (Legislative Decree No. 152 of 3/4/2006).

Dispose of used product and containers by handing them over to authorised companies, in accordance with the provisions of Legislative Decree No. 152/2006 (Consolidated Environmental Act, which replaced the Ronchi Decree) as amended.

The used product is to be considered special waste to be classified in accordance with Directive No. 2008/98/EC on waste and related matters. Recover if possible. Send to authorised disposal plants or incineration under controlled conditions (152/2006 art. 184).

Act in accordance with the local and national laws in force.

Contaminated packaging must be emptied as far as possible. After cleaning, send to an authorised centre for recycling or disposal."

## SECTION 14: Transport information



#### 14.1. UN number or ID number

ADR-UN Number: 1987

IATA-UN Number: 1987

IMDG-UN Number: 1987

#### 14.2. UN proper shipping name

ADR-Shipping Name: ALCOHOLS, N.O.S. (vapour pressure at 50 °C more than 110 kPa)(ethanol, propan-2-ol; isopropyl alcohol; isopropanol)

IATA-Shipping Name: ALCOHOLS, N.O.S. (vapour pressure at 50 °C more than 110 kPa)(ethanol, propan-2-ol; isopropyl alcohol; isopropanol)

IMDG-Shipping Name: ALCOHOLS, N.O.S. (vapour pressure at 50 °C more than 110 kPa)(ethanol, propan-2-ol; isopropyl alcohol; isopropanol)

#### 14.3. Transport hazard class(es)

ADR-Class: 3

ADR - Hazard identification number: 33

IATA-Class: 3

IATA-Label: 3

IMDG-Class: 3

Sea (IMO): 3. PG II

#### 14.4. Packing group

ADR-Packing Group: II

IATA-Packing group: II

IMDG-Packing group: II

#### 14.5. Environmental hazards

ADR-Environmental Pollutant: No

IMDG-Marine pollutant: No

IMDG-EmS: F-E,

S-D

#### 14.6. Special precautions for user

ADR-Subsidiary hazards: -

ADR-S.P.: 274 601 640D

ADR-Transport category (Tunnel restriction code): 2 (D/E)

IATA-Passenger Aircraft: 353

IATA-Subsidiary hazards: -

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IATA-Cargo Aircraft: 364  
IATA-S.P.: A3 A180  
IATA-ERG: 3L  
IMDG-Subsidiary hazards: -  
IMDG-Stowage and handling: Category A  
IMDG-Segregation: -  
14.7. Maritime transport in bulk according to IMO instruments  
N.A.  
Limited Quantity: 1 L  
Exempted Quantity: E2

#### SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture  
Dir. 98/24/EC (Risks related to chemical agents at work)  
Dir. 2000/39/EC (Occupational exposure limit values)  
Regulation (EC) n. 1907/2006 (REACH)  
Regulation (EC) n. 1272/2008 (CLP)  
Regulation (EC) n. 790/2009 (ATP 1 CLP) and (EU) n. 758/2013  
Regulation (EU) n. 2020/878  
Regulation (EU) n. 286/2011 (ATP 2 CLP)  
Regulation (EU) n. 618/2012 (ATP 3 CLP)  
Regulation (EU) n. 487/2013 (ATP 4 CLP)  
Regulation (EU) n. 944/2013 (ATP 5 CLP)  
Regulation (EU) n. 605/2014 (ATP 6 CLP)  
Regulation (EU) n. 2015/1221 (ATP 7 CLP)  
Regulation (EU) n. 2016/918 (ATP 8 CLP)  
Regulation (EU) n. 2016/1179 (ATP 9 CLP)  
Regulation (EU) n. 2017/776 (ATP 10 CLP)  
Regulation (EU) n. 2018/669 (ATP 11 CLP)  
Regulation (EU) n. 2018/1480 (ATP 13 CLP)  
Regulation (EU) n. 2019/521 (ATP 12 CLP)  
Regulation (EU) n. 2020/217 (ATP 14 CLP)  
Regulation (EU) n. 2020/1182 (ATP 15 CLP)  
Regulation (EU) n. 2021/643 (ATP 16 CLP)  
Regulation (EU) n. 2021/849 (ATP 17 CLP)  
Regulation (EU) n. 2022/692 (ATP 18 CLP)

Restrictions related to the product or the substances contained according to Annex XVII Regulation (EC) 1907/2006 (REACH) and subsequent modifications:

Restrictions related to the product:

Restriction 3

Restriction 40

Restrictions related to the substances contained:

Restriction 75

Volatile Organic compounds - VOCs = 63.06 %

Volatile Organic compounds - VOCs = 630.58 g/Kg

Volatile Organic compounds - VOCs = 570.04 g/l

Where applicable, refer to the following regulatory provisions :

Directive 2012/18/EU (Seveso III)

Regulation (EC) nr 648/2004 (detergents).

Dir. 2004/42/EC (VOC directive)

Provisions related to directive EU 2012/18 (Seveso III):

Seveso III category according to Annex 1, part 1

Product belongs to category: P5c

15.2. Chemical safety assessment

## Safety Data Sheet

### LAVAVETRI DP1 -45°C



No Chemical Safety Assessment has been carried out for the mixture.  
Substances for which a Chemical Safety Assessment has been carried out:  
ethanol  
ethanediol; ethylene glycol  
propan-2-ol; isopropyl alcohol; isopropanol

#### SECTION 16: Other information

Text of phrases referred to under heading 3:

H225 Highly flammable liquid and vapour.  
H319 Causes serious eye irritation.  
H302 Harmful if swallowed.  
H373 (kidneys) (Oral) May cause damage to organs (kidneys) through prolonged or repeated exposure if swallowed.  
H336 May cause drowsiness or dizziness.  
EUH066 Repeated exposure may cause skin dryness or cracking.  
H332 Harmful if inhaled.  
H335 May cause respiratory irritation.  
H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.  
H318 Causes serious eye damage.  
H315 Causes skin irritation.

Hazard class and hazard category	Code	Description
Met. Corr. 1	2.16/1	Substance or mixture corrosive to metals, Category 1
Flam. Liq. 2	2.6/2	Flammable liquid, Category 2
Acute Tox. 4	3.1/4/Inhal	Acute toxicity (inhalation), Category 4
Acute Tox. 4	3.1/4/Oral	Acute toxicity (oral), Category 4
Skin Corr. 1A	3.2/1A	Skin corrosion, Category 1A
Skin Corr. 1B	3.2/1B	Skin corrosion, Category 1B
Skin Irrit. 2	3.2/2	Skin irritation, Category 2
Eye Dam. 1	3.3/1	Serious eye damage, Category 1
Eye Irrit. 2	3.3/2	Eye irritation, Category 2
STOT SE 3	3.8/3	Specific target organ toxicity - single exposure, Category 3
STOT RE 2	3.9/2	Specific target organ toxicity - repeated exposure, Category 2

Paragraphs modified from the previous revision:

SECTION 1: Identification of the substance/mixture and of the company/undertaking  
SECTION 5: Firefighting measures  
SECTION 6: Accidental release measures  
SECTION 7: Handling and storage  
SECTION 8: Exposure controls/personal protection

## Safety Data Sheet

### LAVAVETRI DP1 -45°C



SECTION 9: Physical and chemical properties  
SECTION 10: Stability and reactivity  
SECTION 11: Toxicological information  
SECTION 12: Ecological information  
SECTION 13: Disposal considerations  
SECTION 15: Regulatory information

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Classification according to Regulation (EC) Nr. 1272/2008	Classification procedure
Flam. Liq. 2, H225	On basis of test data
Eye Irrit. 2, H319	Calculation method

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre,  
Commission of the European Communities  
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van  
Nostrand Reinold

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality. It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.  
ATE: Acute Toxicity Estimate  
ATEmix: Acute toxicity Estimate (Mixtures)  
CAS: Chemical Abstracts Service (division of the American Chemical Society).  
CLP: Classification, Labeling, Packaging.  
DNEL: Derived No Effect Level.  
EINECS: European Inventory of Existing Commercial Chemical Substances.  
GefStoffVO: Ordinance on Hazardous Substances, Germany.  
GHS: Globally Harmonized System of Classification and Labeling of Chemicals.  
IATA: International Air Transport Association.  
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).  
ICAO: International Civil Aviation Organization.  
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).  
IMDG: International Maritime Code for Dangerous Goods.  
INCI: International Nomenclature of Cosmetic Ingredients.  
KSt: Explosion coefficient.  
LC50: Lethal concentration, for 50 percent of test population.  
LD50: Lethal dose, for 50 percent of test population.  
NA: Not applicable  
PNEC: Predicted No Effect Concentration.  
RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.

**Safety Data Sheet**  
**LAVAVETRI DP1 -45°C**



STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWA:	Time-weighted average
WGK:	German Water Hazard Class.

# Exposure Scenario, 23/07/2019

Substance identity	
Chemical name	Etanolo
CAS No.	64-17-5
EINECS No.	200-578-6

## Table of contents

1. **ES 1** Consumer use; Anti-freeze and de-icing products (PC4)
2. **ES 2** Consumer use; Various products (PC39, PC28)
3. **ES 3** Use at industrial site
4. **ES 4** Use at industrial site
5. **ES 5** Widespread use by professional workers
6. **ES 6** Widespread use by professional workers
7. **ES 7** Consumer use; Fuels (PC13)
8. **ES 8** Consumer use; Various products (PC1, PC3, PC8, PC18, PC23)



1. ES 1 Consumer use; Anti-freeze and de-icing products (PC4)	
<b>1.1 TITLE SECTION</b>	
Exposure Scenario name	Car care and maintenance products - De-icing and anti-icing applications
Date - Version	22/07/2019 - 1.0
Life Cycle Stage	Consumer use
Main user group	Consumer uses
Sector(s) of use	Consumer uses (SU21)
Product Categories	Anti-freeze and de-icing products (PC4)
<b>Environment Contributing Scenario</b>	
CS1 Covered by	ERC8d
<b>Consumer Contributing Scenario</b>	
CS2 Car Care - De-icing and anti-icing applications	PC4 - PC4_1
CS3 Car Care - De-icing and anti-icing applications	PC4 - PC4_2
CS4 Car Care - De-icing and anti-icing applications	PC4 - PC4_3
<b>1.2 Conditions of use affecting exposure</b>	
<b>1.2. CS1: Environment Contributing Scenario: Covered by (ERC8d)</b>	
Environmental release categories	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)
<i>Product (article) characteristics</i>	
Physical form of product: Liquid	
Vapour pressure: 5726 Pa	
<i>Conditions and measures related to treatment of waste (including article waste)</i>	
Waste treatment No specific measures identified.	
<i>Other conditions affecting environmental exposure</i>	
Local marine water dilution factor: 100 Local freshwater dilution factor: 10	
<b>1.2. CS2: Consumer Contributing Scenario: Car Care - De-icing and anti-icing applications (PC4)</b>	
Product Categories	Anti-freeze and de-icing products (PC4)
Product (Sub-)Categories	Washing car window (PC4_1)
<i>Product (article) characteristics</i>	
Concentration of substance in product: Covers percentage substance in the product up to 1 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
Amounts used: Amount per use 0.5 g	
Duration: Covers use up to 0.017 h/event	
Frequency:	

Covers use up to 1 uses per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in a one car garage (>34 m <sup>3</sup> ) under typical ventilation.	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>1.2. CS3: Consumer Contributing Scenario: Car Care - De-icing and anti-icing applications (PC4)</b>	
<b>Product Categories</b>	Anti-freeze and de-icing products (PC4)
<b>Product (Sub-)Categories</b>	Pouring into radiator (PC4_2)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 10 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 2000 g	
<b>Duration:</b> Covers use up to 0.17 h/event	
<b>Frequency:</b> Covers use up to 1 uses per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in a one car garage (>34 m <sup>3</sup> ) under typical ventilation.	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>Additional conditions human health</b> Covers skin contact area up to 482 cm <sup>2</sup>	
<b>1.2. CS4: Consumer Contributing Scenario: Car Care - De-icing and anti-icing applications (PC4)</b>	
<b>Product Categories</b>	Anti-freeze and de-icing products (PC4)
<b>Product (Sub-)Categories</b>	Lock de-icer (PC4_3)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 4 g	
<b>Duration:</b> Covers use up to 0.25 h/event	
<b>Frequency:</b> Covers use up to 1 uses per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in a one car garage (>34 m <sup>3</sup> ) under typical ventilation.	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>Additional conditions human health</b> Covers skin contact area up to 214 cm <sup>2</sup>	
<b>1.3 Exposure estimation and reference to its source</b>	
<b>1.3. CS1: Environment Contributing Scenario: Covered by (ERC8d)</b>	

protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
freshwater	0.00443 mg/L	N/A	0.00461
freshwater sediment	0.0172 mg/kg bw/day	N/A	0.00467
marine water	0.000508 mg/L	N/A	0.000643
marine sediment	0.00194 mg/kg bw/day	N/A	0.00064
soil	0.00123 mg/kg bw/day	N/A	0.00724

## 1.2. CS2: Consumer Contributing Scenario: Car Care - De-icing and anti-icing applications (PC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.000102 mg/m <sup>3</sup>	N/A	8.94E-07
inhalative, local, short-term	0.000102 mg/m <sup>3</sup>	N/A	8.94E-07
dermal, systemic, long-term	0 mg/kg bw/day	N/A	N/A
combined routes, systemic, long-term	N/A	N/A	8.94E-07

## 1.2. CS3: Consumer Contributing Scenario: Car Care - De-icing and anti-icing applications (PC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	1.84 mg/m <sup>3</sup>	N/A	0.0161
inhalative, local, short-term	1.84 mg/m <sup>3</sup>	N/A	0.0161
dermal, systemic, long-term	5.62 mg/kg bw/day	N/A	0.0272
combined routes, systemic, long-term	N/A	N/A	0.0434

## 1.2. CS4: Consumer Contributing Scenario: Car Care - De-icing and anti-icing applications (PC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.51 mg/m <sup>3</sup>	N/A	0.00447
inhalative, local, short-term	0.51 mg/m <sup>3</sup>	N/A	0.0447
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.0679
combined routes, systemic, long-term	N/A	N/A	0.0724

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

**Guidance to check compliance with the exposure scenario:**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 2. ES 2 Consumer use; Various products (PC39, PC28)

### 2.1 TITLE SECTION

Exposure Scenario name	Cosumer other uses
Date - Version	22/07/2019 - 1.0
Life Cycle Stage	Consumer use
Main user group	Consumer uses
Sector(s) of use	Consumer uses (SU21)
Product Categories	Cosmetics, personal care products (PC39) - Perfumes, fragrances (PC28)

#### Environment Contributing Scenario

CS1 Covered by	ERC8a
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#### Consumer Contributing Scenario

CS2 Consumer	PC39 - PC28
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## 2.2 Conditions of use affecting exposure

### 2.2. CS1: Environment Contributing Scenario: Covered by (ERC8a)

Environmental release categories	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a)
----------------------------------	---

#### *Product (article) characteristics*

##### Physical form of product:

Liquid

##### Vapour pressure:

5726 Pa

#### *Conditions and measures related to treatment of waste (including article waste)*

##### Waste treatment

No specific measures identified.

### 2.2. CS2: Consumer Contributing Scenario: Consumer (PC39, PC28)

Product Categories	Cosmetics, personal care products - Perfumes, fragrances (PC39, PC28)
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## 2.3 Exposure estimation and reference to its source

### 2.3. CS1: Environment Contributing Scenario: Covered by (ERC8a)

protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
freshwater	0.00236 mg/L	N/A	0.00246
freshwater sediment	0.00904 mg/kg bw/day	N/A	0.00246
marine water	0.000301 mg/L	N/A	0.000381
marine sediment	0.00115 mg/kg bw/day	N/A	0.00038
soil	0.00115 mg/kg bw/day	N/A	0.00676

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

### **Guidance to check compliance with the exposure scenario:**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

### 3. ES 3 Use at industrial site

#### 3.1 TITLE SECTION

Exposure Scenario name	Solvent
Date - Version	22/07/2019 - 1.0
Life Cycle Stage	Use at industrial site
Main user group	Industrial uses
Sector(s) of use	Industrial uses (SU3)

#### Environment Contributing Scenario

CS1 Covered by	ERC4
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#### Worker Contributing Scenario

CS2 Industrial	PROC1
CS3 Industrial	PROC2
CS4 Industrial	PROC3
CS5 Industrial	PROC4
CS6 Industrial	PROC5
CS7 Industrial	PROC7
CS8 Industrial	PROC8a
CS9 Industrial	PROC8b
CS10 Industrial	PROC10
CS11 Industrial	PROC13
CS12 Industrial	PROC15

#### 3.2 Conditions of use affecting exposure

##### 3.2. CS1: Environment Contributing Scenario: Covered by (ERC4)

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

##### *Product (article) characteristics*

**Vapour pressure:**  
< 10 kPa

##### *Amount used, frequency and duration of use (or from service life)*

##### **Amounts used:**

Annual site tonnage 3000 t(tonnes)/year

**Maximum allowable site tonnage (MSafe):** 124000 kg/day

**Release type:** Continuous release

**Emission days:** 300 days per year

##### *Technical and organisational conditions and measures*

**Control measures to prevent releases**



Treat air emission to provide the required removal efficiency of (%):	Air - minimum efficiency of: 90 %
Prevent discharge of undissolved substance to or recover from onsite wastewater.	Water - minimum efficiency of: 87 %

### *Conditions and measures related to sewage treatment plant*

#### **STP type:**

Municipal Sewage Treatment Plant

**STP effluent (m<sup>3</sup>/day):** 2000

### *Conditions and measures related to treatment of waste (including article waste)*

#### **Waste treatment**

Incineration, disposal or recycling at specific offsite provider Contain and dispose of waste according to local regulations.	Waste - minimum efficiency of: 99.98 %
--	--

### *Other conditions affecting environmental exposure*

**Local marine water dilution factor:** 100

**Local freshwater dilution factor:** 10

**Receiving surface water flow:** 2000 m<sup>3</sup>/h

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

#### **Additional Good Practice Advice:**

Contain leaks or spills within cabinets with removable trays.

### **3.2. CS2: Worker Contributing Scenario: Industrial (PROC1)**

<b>Process Categories</b>	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
---------------------------	--

### *Product (article) characteristics*

#### **Physical form of product:**

Liquid

#### **Vapour pressure:**

< 10 kPa

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

### *Technical and organisational conditions and measures*

#### **Technical and organisational measures**

Use in contained systems

Store substance within a closed system.

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

#### **Personal protection**

Use suitable eye protection.

### *Other conditions affecting worker exposure*

**Temperature:** Covers use at ambient temperatures.

### **3.2. CS3: Worker Contributing Scenario: Industrial (PROC2)**

<b>Process Categories</b>	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
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<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Use in contained systems Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>3.2. CS4: Worker Contributing Scenario: Industrial (PROC3)</b>	
<b>Process Categories</b>	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Use in contained systems Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>3.2. CS5: Worker Contributing Scenario: Industrial (PROC4)</b>	
<b>Process Categories</b>	Chemical production where opportunity for exposure arises (PROC4)
<i>Product (article) characteristics</i>	

<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Use in contained systems Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>3.2. CS6: Worker Contributing Scenario: Industrial (PROC5)</b>	
<b>Process Categories</b>	Mixing or blending in batch processes (PROC5)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Use in contained systems Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>3.2. CS7: Worker Contributing Scenario: Industrial (PROC7)</b>	
<b>Process Categories</b>	Industrial spraying (PROC7)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	

**Vapour pressure:**

&lt; 10 kPa

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

*Amount used, frequency and duration of use/exposure***Duration:**

Covers daily exposures up to 8 hours

*Technical and organisational conditions and measures***Technical and organisational measures**

Use in contained systems

Store substance within a closed system.

Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

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

Use suitable eye protection.

*Other conditions affecting worker exposure***Temperature:** Covers use at ambient temperatures.**3.2. CS8: Worker Contributing Scenario: Industrial (PROC8a)****Process Categories**

Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

*Product (article) characteristics***Physical form of product:**

Liquid

**Vapour pressure:**

&lt; 10 kPa

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

*Amount used, frequency and duration of use/exposure***Duration:**

Covers daily exposures up to 8 hours

*Technical and organisational conditions and measures***Technical and organisational measures**

Use in contained systems

Store substance within a closed system.

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

Use suitable eye protection.

*Other conditions affecting worker exposure***Temperature:** Covers use at ambient temperatures.**3.2. CS9: Worker Contributing Scenario: Industrial (PROC8b)****Process Categories**

Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

*Product (article) characteristics***Physical form of product:**

Liquid

<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Use in contained systems Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>3.2. CS10: Worker Contributing Scenario: Industrial (PROC10)</b>	
<b>Process Categories</b>	Roller application or brushing (PROC10)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Use in contained systems Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>3.2. CS11: Worker Contributing Scenario: Industrial (PROC13)</b>	
<b>Process Categories</b>	Treatment of articles by dipping and pouring (PROC13)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

*Amount used, frequency and duration of use/exposure***Duration:**

Covers daily exposures up to 8 hours

*Technical and organisational conditions and measures***Technical and organisational measures**

Use in contained systems

Store substance within a closed system.

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

Use suitable eye protection.

*Other conditions affecting worker exposure*

**Temperature:** Covers use at ambient temperatures.

**3.2. CS12: Worker Contributing Scenario: Industrial (PROC15)****Process Categories**

Use as laboratory reagent (PROC15)

*Product (article) characteristics***Physical form of product:**

Liquid

**Vapour pressure:**

< 10 kPa

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

*Amount used, frequency and duration of use/exposure***Duration:**

Covers daily exposures up to 8 hours

*Technical and organisational conditions and measures***Technical and organisational measures**

Use in contained systems

Store substance within a closed system.

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

Use suitable eye protection.

*Other conditions affecting worker exposure*

**Temperature:** Covers use at ambient temperatures.

**3.3 Exposure estimation and reference to its source****3.3. CS1: Environment Contributing Scenario: Covered by (ERC4)**

Release route	Release rate	Release estimation method
Air	0.98 %	N/A
Water	0.01 %	N/A
soil	0 %	N/A

protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
wastewater treatment plant microbes	6.32 mg/L	N/A	0.0109
freshwater	0.577 mg/L	N/A	0.601
freshwater sediment	2.21 mg/kg bw/day	N/A	0.601
marine water	0.0635 mg/L	N/A	0.0804
marine sediment	0.0635 mg/kg bw/day	N/A	0.0805
soil	0.0525 mg/kg bw/day	N/A	0.309

### 3.3. CS2: Worker Contributing Scenario: Industrial (PROC1)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	9.6 mg/m <sup>3</sup>	N/A	< 0.01
dermal, systemic, long-term	0.03 mg/kg bw/day	N/A	< 0.01
combined routes, systemic, long-term	N/A	N/A	< 0.01

### 3.3. CS3: Worker Contributing Scenario: Industrial (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	9.6 mg/m <sup>3</sup>	N/A	0.01
dermal, systemic, long-term	1.4 mg/kg bw/day	N/A	0.004
combined routes, systemic, long-term	N/A	N/A	0.0141

### 3.3. CS4: Worker Contributing Scenario: Industrial (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	19 mg/m <sup>3</sup>	N/A	0.02
dermal, systemic, long-term	0.69 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.0222

### 3.3. CS5: Worker Contributing Scenario: Industrial (PROC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
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inhalative, systemic, long-term	38 mg/m <sup>3</sup>	N/A	0.04
dermal, systemic, long-term	6.9 mg/kg bw/day	N/A	0.02
combined routes, systemic, long-term	N/A	N/A	0.0603

### 3.3. CS6: Worker Contributing Scenario: Industrial (PROC5)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	96 mg/m <sup>3</sup>	N/A	0.101
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.141

### 3.3. CS7: Worker Contributing Scenario: Industrial (PROC7)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	140 mg/m <sup>3</sup>	N/A	0.151
dermal, systemic, long-term	43 mg/kg bw/day	N/A	0.125
combined routes, systemic, long-term	N/A	N/A	0.276

### 3.3. CS8: Worker Contributing Scenario: Industrial (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	96 mg/m <sup>3</sup>	N/A	0.101
dermal, systemic, long-term	96 mg/kg bw/day	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.141

### 3.3. CS9: Worker Contributing Scenario: Industrial (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	48 mg/m <sup>3</sup>	N/A	0.05
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.0904

### 3.3. CS10: Worker Contributing Scenario: Industrial (PROC10)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
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inhalative, systemic, long-term	96 mg/m <sup>3</sup>	N/A	0.101
dermal, systemic, long-term	27 mg/kg bw/day	N/A	0.08
combined routes, systemic, long-term	N/A	N/A	0.181

### 3.3. CS11: Worker Contributing Scenario: Industrial (PROC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	96 mg/m <sup>3</sup>	N/A	0.101
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.141

### 3.3. CS12: Worker Contributing Scenario: Industrial (PROC15)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	19 mg/m <sup>3</sup>	N/A	0.02
dermal, systemic, long-term	0.34 mg/kg bw/day	N/A	< 0.01
combined routes, systemic, long-term	N/A	N/A	0.0212

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

### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 4. ES 4 Use at industrial site

### 4.1 TITLE SECTION

Exposure Scenario name	Fuel
Date - Version	22/07/2019 - 1.0
Life Cycle Stage	Use at industrial site
Main user group	Industrial uses
Sector(s) of use	Industrial uses (SU3)

### Environment Contributing Scenario

CS1 Covered by	ERC7
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### Worker Contributing Scenario

CS2 Industrial	PROC1
CS3 Industrial	PROC2
CS4 Industrial	PROC3
CS5 Industrial	PROC8a
CS6 Industrial	PROC8b
CS7 Industrial	PROC15
CS8 Industrial	PROC16

## 4.2 Conditions of use affecting exposure

### 4.2. CS1: Environment Contributing Scenario: Covered by (ERC7)

Environmental release categories	Use of functional fluid at industrial site (ERC7)
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### *Product (article) characteristics*

#### Physical form of product:

Liquid

#### Vapour pressure:

< 10 kPa

### *Amount used, frequency and duration of use (or from service life)*

#### Amounts used:

Annual site tonnage 20000 t(tonnes)/year

**Maximum allowable site tonnage (MSafe):** 14500000 kg/day

**Release type:** Continuous release

**Emission days:** 300 days per year

### *Technical and organisational conditions and measures*

#### Control measures to prevent releases

Provide onsite wastewater removal efficiency of <sup>3</sup> (%):

Water - minimum efficiency of: 87 %

<b>Conditions and measures related to sewage treatment plant</b>	
<b>STP type:</b> Municipal Sewage Treatment Plant Water - minimum efficiency of: = 87 % <b>STP effluent (m<sup>3</sup>/day):</b> 2000	
<b>Conditions and measures related to treatment of waste (including article waste)</b>	
<b>Waste treatment</b> Product residual disposal complies with applicable regulations.	
<b>Other conditions affecting environmental exposure</b>	
<b>Local marine water dilution factor:</b> 100 <b>Local freshwater dilution factor:</b> 10 <b>Receiving surface water flow:</b> 2000 m <sup>3</sup> /day	
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply.</b>	
<b>Additional Good Practice Advice:</b> Adequate closed storage facilities (e.g., bulk storage tanks, intermediate bulk containers, drums) are required.	
<b>4.2. CS2: Worker Contributing Scenario: Industrial (PROC1)</b>	
<b>Process Categories</b>	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
<b>Product (article) characteristics</b>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<b>Amount used, frequency and duration of use/exposure</b>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Technical and organisational conditions and measures</b>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
<b>Personal protection</b> Use suitable eye protection.	
<b>4.2. CS3: Worker Contributing Scenario: Industrial (PROC2)</b>	
<b>Process Categories</b>	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
<b>Product (article) characteristics</b>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<b>Amount used, frequency and duration of use/exposure</b>	

<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<b>4.2. CS4: Worker Contributing Scenario: Industrial (PROC3)</b>	
<b>Process Categories</b>	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<b>4.2. CS5: Worker Contributing Scenario: Industrial (PROC8a)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	

<b>Personal protection</b> Use suitable eye protection.	
<b>4.2. CS6: Worker Contributing Scenario: Industrial (PROC8b)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<b>4.2. CS7: Worker Contributing Scenario: Industrial (PROC15)</b>	
<b>Process Categories</b>	Use as laboratory reagent (PROC15)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Vapour pressure:</b> < 10 kPa	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<b>4.2. CS8: Worker Contributing Scenario: Industrial (PROC16)</b>	
<b>Process Categories</b>	Use of fuels (PROC16)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	

**Vapour pressure:**

&lt; 10 kPa

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

*Amount used, frequency and duration of use/exposure***Duration:**

Covers daily exposures up to 8 hours

*Technical and organisational conditions and measures***Technical and organisational measures**

Handle substance within a closed system.

Store substance within a closed system.

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

Use suitable eye protection.

**4.3 Exposure estimation and reference to its source****4.3. CS1: Environment Contributing Scenario: Covered by (ERC7)**

Release route	Release rate	Release estimation method
Air	0.0025 %	N/A
Water	1E-05 %	N/A
soil	0 %	N/A

protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
wastewater treatment plant microbes	0.0421 mg/L	N/A	7.26E-05
freshwater	0.00657 mg/L	N/A	0.00684
freshwater sediment	0.00685 mg/kg bw/day	N/A	0.00685
marine water	0.00363 mg/L	N/A	0.00459
marine sediment	0.0139 mg/kg bw/day	N/A	0.00459
soil	0.00694 mg/kg bw/day	N/A	0.0408

**4.3. CS2: Worker Contributing Scenario: Industrial (PROC1)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.019 mg/m <sup>3</sup>	N/A	< 0.001
dermal, systemic, long-term	0.03 mg/kg bw/day	N/A	< 0.001
combined routes, systemic, long-term	N/A	N/A	< 0.001



#### 4.3. CS3: Worker Contributing Scenario: Industrial (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	9.6 mg/m <sup>3</sup>	N/A	0.01
dermal, systemic, long-term	1.4 mg/kg bw/day	N/A	0.004
combined routes, systemic, long-term	N/A	N/A	0.0222

#### 4.3. CS4: Worker Contributing Scenario: Industrial (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	19 mg/m <sup>3</sup>	N/A	0.02
dermal, systemic, long-term	0.69 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.222

#### 4.3. CS5: Worker Contributing Scenario: Industrial (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	96 mg/m <sup>3</sup>	N/A	0.101
dermal, systemic, long-term	14 mg/m <sup>3</sup>	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.141

#### 4.3. CS6: Worker Contributing Scenario: Industrial (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	48 mg/m <sup>3</sup>	N/A	0.05
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.0904

#### 4.3. CS7: Worker Contributing Scenario: Industrial (PROC15)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	19 mg/m <sup>3</sup>	N/A	0.02
dermal, systemic, long-term	0.34 mg/kg bw/day	N/A	< 0.001

combined routes, systemic, long-term	N/A	N/A	0.0112
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#### 4.3. CS8: Worker Contributing Scenario: Industrial (PROC16)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	9.6 mg/m <sup>3</sup>	N/A	0.01
dermal, systemic, long-term	0.34 mg/kg bw/day	N/A	< 0.001
combined routes, systemic, long-term	N/A	N/A	0.0111

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

##### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 5. ES 5 Widespread use by professional workers

### 5.1 TITLE SECTION

Exposure Scenario name	Solvent
Date - Version	23/07/2019 - 1.0
Life Cycle Stage	Widespread use by professional workers
Main user group	Professional uses
Sector(s) of use	Professional uses (SU22)

#### Environment Contributing Scenario

CS1 Covered by	ERC8a - ERC8d
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#### Worker Contributing Scenario

CS2 General use from professional operators	PROC1
CS3 General use from professional operators	PROC2
CS4 General use from professional operators	PROC3
CS5 General use from professional operators	PROC4
CS6 General use from professional operators	PROC5 - PROC8a
CS7 General use from professional operators	PROC8b
CS8 General use from professional operators	PROC10
CS9 General use from professional operators	PROC11
CS10 General use from professional operators	PROC11
CS11 General use from professional operators	PROC13
CS12 General use from professional operators	PROC19

### 5.2 Conditions of use affecting exposure

#### 5.2. CS1: Environment Contributing Scenario: Covered by (ERC8a, ERC8d)

Environmental release categories	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) - Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8a, ERC8d)
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#### *Product (article) characteristics*

##### Physical form of product:

Liquid, vapour pressure 0,5 - 10 kPa at STP

#### *Amount used, frequency and duration of use (or from service life)*

##### Amounts used:

Annual site tonnage 0.1 t(tonnes)/year

**Maximum allowable site tonnage (MSafe):** 715 kg/day

**Release type:** Continuous release

**Emission days:** 365 days per year

#### *Technical and organisational conditions and measures*

## Control measures to prevent releases

Treat air emission to provide the required removal efficiency of (%):	Air - minimum efficiency of: 90 %
Prevent discharge of undissolved substance to or recover from onsite wastewater.	

## Conditions and measures related to treatment of waste (including article waste)

### Waste treatment

Hazardous waste incineration	Waste - minimum efficiency of: 99.98 %
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## 5.2. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)

Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
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### Product (article) characteristics

#### Physical form of product:

Liquid, vapour pressure 0,5 - 10 kPa at STP

#### Concentration of substance in product:

Covers percentage substance in the product up to 100 %.

### Amount used, frequency and duration of use/exposure

#### Duration:

Covers daily exposures up to 8 hours

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

### Personal protection

Use suitable eye protection.

## 5.2. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)

Process Categories	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
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### Product (article) characteristics

#### Physical form of product:

Liquid, vapour pressure 0,5 - 10 kPa at STP

#### Concentration of substance in product:

Covers percentage substance in the product up to 100 %.

### Amount used, frequency and duration of use/exposure

#### Duration:

Covers daily exposures up to 8 hours

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

### Personal protection

Use suitable eye protection.

## 5.2. CS4: Worker Contributing Scenario: General use from professional operators (PROC3)

Process Categories	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)
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### Product (article) characteristics

#### Physical form of product:

Liquid, vapour pressure 0,5 - 10 kPa at STP

#### Concentration of substance in product:

Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<b>5.2. CS5: Worker Contributing Scenario: General use from professional operators (PROC4)</b>	
<b>Process Categories</b>	Chemical production where opportunity for exposure arises (PROC4)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<b>5.2. CS6: Worker Contributing Scenario: General use from professional operators (PROC5, PROC8a)</b>	
<b>Process Categories</b>	Mixing or blending in batch processes - Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC5, PROC8a)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<b>5.2. CS7: Worker Contributing Scenario: General use from professional operators (PROC8b)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	

<b>Personal protection</b> Use suitable eye protection.	
<b>5.2. CS8: Worker Contributing Scenario: General use from professional operators (PROC10)</b>	
<b>Process Categories</b>	Roller application or brushing (PROC10)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection.	
<b>5.2. CS9: Worker Contributing Scenario: General use from professional operators (PROC11)</b>	
<b>Process Categories</b>	Non industrial spraying (PROC11)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Provide a good standard of controlled ventilation (10 to 15 air changes per hour).	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Use suitable eye protection. Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>5.2. CS10: Worker Contributing Scenario: General use from professional operators (PROC11)</b>	
<b>Process Categories</b>	Non industrial spraying (PROC11)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	

### *Technical and organisational conditions and measures*

#### **Technical and organisational measures**

Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

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

#### **Personal protection**

Use suitable eye protection.

Wear suitable gloves tested to EN374.

Wear a respirator conforming to EN140.

### *Other conditions affecting worker exposure*

Outdoor use

## **5.2. CS11: Worker Contributing Scenario: General use from professional operators (PROC13)**

#### **Process Categories**

Treatment of articles by dipping and pouring (PROC13)

### *Product (article) characteristics*

#### **Physical form of product:**

Liquid, vapour pressure 0,5 - 10 kPa at STP

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

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

#### **Personal protection**

Use suitable eye protection.

Wear suitable gloves tested to EN374.

## **5.2. CS12: Worker Contributing Scenario: General use from professional operators (PROC19)**

#### **Process Categories**

Manual activities involving hand contact (PROC19)

### *Product (article) characteristics*

#### **Physical form of product:**

Liquid, vapour pressure 0,5 - 10 kPa at STP

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

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

#### **Personal protection**

Use suitable eye protection.

Wear suitable gloves tested to EN374.

## **5.3 Exposure estimation and reference to its source**

### **5.3. CS1: Environment Contributing Scenario: Covered by (ERC8a, ERC8d)**

Release route	Release rate	Release estimation method
Air	0.98 %	N/A
Water	0.01 %	N/A

soil	0.01 %	N/A
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protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
wastewater treatment plant microbes	0.000173 mg/L	N/A	2.98E-07
freshwater	0.00238 mg/L	N/A	0.00248
freshwater sediment	0.00912 mg/kg bw/day	N/A	0.00248
marine sediment	0.000303 mg/L	N/A	0.000384
marine sediment	0.00116 mg/kg bw/day	N/A	0.000383
soil	0.00116 mg/kg bw/day	N/A	0.00682

### 5.3. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.019 mg/m <sup>3</sup>	N/A	< 0.001
dermal, systemic, long-term	0.03 mg/kg bw/day	N/A	< 0.001
combined routes, systemic, long-term	N/A	N/A	< 0.001

### 5.3. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	38 mg/m <sup>3</sup>	N/A	0.04
dermal, systemic, long-term	1.4 mg/kg bw/day	N/A	0.004
combined routes, systemic, long-term	N/A	N/A	0.0443

### 5.3. CS4: Worker Contributing Scenario: General use from professional operators (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	48 mg/m <sup>3</sup>	N/A	0.05
dermal, systemic, long-term	0.69 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.0524

### 5.3. CS5: Worker Contributing Scenario: General use from professional operators (PROC4)



Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	96 mg/m <sup>3</sup>	N/A	0.101
dermal, systemic, long-term	6.9 mg/kg bw/day	N/A	0.02
combined routes, systemic, long-term	N/A	N/A	0.121

### 5.3. CS6: Worker Contributing Scenario: General use from professional operators (PROC5, PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	190 mg/m <sup>3</sup>	N/A	0.202
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.242

### 5.3. CS7: Worker Contributing Scenario: General use from professional operators (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	96 mg/m <sup>3</sup>	N/A	0.202
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.141

### 5.3. CS8: Worker Contributing Scenario: General use from professional operators (PROC10)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	190 mg/m <sup>3</sup>	N/A	0.202
dermal, systemic, long-term	27 mg/kg bw/day	N/A	0.08
combined routes, systemic, long-term	N/A	N/A	0.282

### 5.3. CS9: Worker Contributing Scenario: General use from professional operators (PROC11)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	290 mg/m <sup>3</sup>	N/A	0.303
dermal, systemic, long-term	21 mg/kg bw/day	N/A	0.062
combined routes, systemic, long-term	N/A	N/A	0.365

### 5.3. CS10: Worker Contributing Scenario: General use from professional operators (PROC11)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	67 mg/m <sup>3</sup>	N/A	0.071
dermal, systemic, long-term	21 mg/kg bw/day	N/A	0.062
combined routes, systemic, long-term	N/A	N/A	0.133

### 5.3. CS11: Worker Contributing Scenario: General use from professional operators (PROC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	190 mg/m <sup>3</sup>	N/A	0.202
dermal, systemic, long-term	2.7 mg/kg bw/day	N/A	0.008
combined routes, systemic, long-term	N/A	N/A	0.21

### 5.3. CS12: Worker Contributing Scenario: General use from professional operators (PROC19)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	190 mg/m <sup>3</sup>	N/A	0.202
dermal, systemic, long-term	28 mg/kg bw/day	N/A	0.082
combined routes, systemic, long-term	N/A	N/A	0.284

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

### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 6. ES 6 Widespread use by professional workers

### 6.1 TITLE SECTION

Exposure Scenario name	Fuel
Date - Version	23/07/2019 - 1.0
Life Cycle Stage	Widespread use by professional workers
Main user group	Professional uses
Sector(s) of use	Professional uses (SU22)

#### Environment Contributing Scenario

CS1 Covered by	ERC9a - ERC9b
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#### Worker Contributing Scenario

CS2 General use from professional operators	PROC1
CS3 General use from professional operators	PROC2
CS4 General use from professional operators	PROC3
CS5 General use from professional operators	PROC8a
CS6 General use from professional operators	PROC8b
CS7 General use from professional operators	PROC16

### 6.2 Conditions of use affecting exposure

#### 6.2. CS1: Environment Contributing Scenario: Covered by (ERC9a, ERC9b)

Environmental release categories	Widespread use of functional fluid (indoor) - Widespread use of functional fluid (outdoor) (ERC9a, ERC9b)
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#### *Product (article) characteristics*

##### Physical form of product:

Liquid, vapour pressure 0,5 - 10 kPa at STP

#### *Amount used, frequency and duration of use (or from service life)*

##### Amounts used:

Annual site tonnage 1 t(tonnes)/year

**Maximum allowable site tonnage (MSafe):** 7190 kg/day

**Release type:** Continuous release

**Emission days:** 365 days per year

#### *Technical and organisational conditions and measures*

##### Control measures to prevent releases

Prevent discharge of undissolved substance to or recover from onsite wastewater.

#### *Conditions and measures related to treatment of waste (including article waste)*

##### Waste treatment

Product residual disposal complies with applicable regulations.

#### 6.2. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)

Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
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<b>Product (article) characteristics</b>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<b>Technical and organisational conditions and measures</b>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
<b>Personal protection</b> Use suitable eye protection.	
<b>6.2. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)</b>	
<b>Process Categories</b>	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
<b>Product (article) characteristics</b>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<b>Technical and organisational conditions and measures</b>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
<b>Personal protection</b> Use suitable eye protection.	
<b>6.2. CS4: Worker Contributing Scenario: General use from professional operators (PROC3)</b>	
<b>Process Categories</b>	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)
<b>Product (article) characteristics</b>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<b>Technical and organisational conditions and measures</b>	
<b>Technical and organisational measures</b> Handle substance within a closed system. Store substance within a closed system.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
<b>Personal protection</b> Use suitable eye protection.	
<b>6.2. CS5: Worker Contributing Scenario: General use from professional operators (PROC8a)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)
<b>Product (article) characteristics</b>	
<b>Physical form of product:</b> Liquid, vapour pressure 0,5 - 10 kPa at STP	

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

***Technical and organisational conditions and measures*****Technical and organisational measures**

Handle substance within a closed system.  
Store substance within a closed system.

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

Use suitable eye protection.

**6.2. CS6: Worker Contributing Scenario: General use from professional operators (PROC8b)****Process Categories**

Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

***Product (article) characteristics*****Physical form of product:**

Liquid, vapour pressure 0,5 - 10 kPa at STP

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

***Technical and organisational conditions and measures*****Technical and organisational measures**

Handle substance within a closed system.  
Store substance within a closed system.

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

Use suitable eye protection.

**6.2. CS7: Worker Contributing Scenario: General use from professional operators (PROC16)****Process Categories**

Use of fuels (PROC16)

***Product (article) characteristics*****Physical form of product:**

Liquid, vapour pressure 0,5 - 10 kPa at STP

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

***Technical and organisational conditions and measures*****Technical and organisational measures**

Handle substance within a closed system.  
Store substance within a closed system.

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

Use suitable eye protection.

**6.3 Exposure estimation and reference to its source****6.3. CS1: Environment Contributing Scenario: Covered by (ERC9a, ERC9b)**

Release route	Release rate	Release estimation method
Air	0.01 %	N/A
Water	1E-05 %	N/A

soil	0 %	N/A
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### 6.3. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.019 mg/m <sup>3</sup>	N/A	< 0.001
dermal, systemic, long-term	0.03 mg/kg bw/day	N/A	< 0.001
combined routes, systemic, long-term	N/A	N/A	< 0.001

### 6.3. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	38 mg/m <sup>3</sup>	N/A	0.04
dermal, systemic, long-term	1.4 mg/kg bw/day	N/A	0.004
combined routes, systemic, long-term	N/A	N/A	0.0443

### 6.3. CS4: Worker Contributing Scenario: General use from professional operators (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	48 mg/m <sup>3</sup>	N/A	0.05
dermal, systemic, long-term	0.69 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.0524

### 6.3. CS5: Worker Contributing Scenario: General use from professional operators (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	190 mg/m <sup>3</sup>	N/A	0.202
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.242

### 6.3. CS6: Worker Contributing Scenario: General use from professional operators (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	96 mg/m <sup>3</sup>	N/A	0.101
dermal, systemic, long-term	14 mg/kg bw/day	N/A	0.04

combined routes, systemic, long-term	N/A	N/A	0.141
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### 6.3. CS7: Worker Contributing Scenario: General use from professional operators (PROC16)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	19 mg/m <sup>3</sup>	N/A	0.02
dermal, systemic, long-term	0.34 mg/kg bw/day	N/A	< 0.001
combined routes, systemic, long-term	N/A	N/A	0.0212

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

### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 7. ES 7 Consumer use; Fuels (PC13)

### 7.1 TITLE SECTION

Exposure Scenario name	Fuel
Date - Version	23/07/2019 - 1.0
Life Cycle Stage	Consumer use
Main user group	Consumer uses
Sector(s) of use	Consumer uses (SU21)
Product Categories	Fuels (PC13)

#### Environment Contributing Scenario

CS1 Covered by	ERC9b
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#### Consumer Contributing Scenario

CS2 Consumer	PC13 - PC13_1
CS3 Consumer	PC13 - PC13_2
CS4 Consumer	PC13 - PC13_3
CS5 Consumer	PC13 - PC13_4

## 7.2 Conditions of use affecting exposure

### 7.2. CS1: Environment Contributing Scenario: Covered by (ERC9b)

Environmental release categories	Widespread use of functional fluid (outdoor) (ERC9b)
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#### *Product (article) characteristics*

##### Physical form of product:

Liquid

##### Vapour pressure:

5726 Pa

#### *Conditions and measures related to treatment of waste (including article waste)*

##### Waste treatment

Product residual disposal complies with applicable regulations.

#### *Other conditions affecting environmental exposure*

Local marine water dilution factor: 100

Local freshwater dilution factor: 10

### 7.2. CS2: Consumer Contributing Scenario: Consumer (PC13)

Product Categories	Fuels (PC13)
Product (Sub-)Categories	Liquid: Automotive Refuelling (PC13_1)

#### *Product (article) characteristics*

##### Concentration of substance in product:

Covers concentrations up to 85 %

#### *Amount used, frequency and duration of use/exposure*

##### Amounts used:

Amount per use 37500 g



<b>Duration:</b> Exposure duration 0.05 h/event <b>Frequency:</b> Covers use up to 51 times per year	
<i>Other conditions affecting consumers exposure</i>	
Outdoor use	
<b>Additional conditions human health</b> Covers skin contact area up to 210 cm <sup>2</sup>	
<b>7.2. CS3: Consumer Contributing Scenario: Consumer (PC13)</b>	
<b>Product Categories</b>	Fuels (PC13)
<b>Product (Sub-)Categories</b>	Liquid Scooter Refuelling (PC13_2)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 85 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 37500 g	
<b>Duration:</b> Exposure duration 0.033 h/event <b>Frequency:</b> Covers use up to 51 times per year	
<i>Other conditions affecting consumers exposure</i>	
Outdoor use	
<b>Additional conditions human health</b> Covers skin contact area up to 210 cm <sup>2</sup>	
<b>7.2. CS4: Consumer Contributing Scenario: Consumer (PC13)</b>	
<b>Product Categories</b>	Fuels (PC13)
<b>Product (Sub-)Categories</b>	Liquid, Garden equipment - Use (PC13_3)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 15 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 750 g	
<b>Duration:</b> Exposure duration 2 h/event <b>Frequency:</b> Covers use up to 25 times per year	
<i>Other conditions affecting consumers exposure</i>	
Outdoor use	
<b>Additional conditions human health</b> Covers skin contact area up to 210 cm <sup>2</sup>	
<b>7.2. CS5: Consumer Contributing Scenario: Consumer (PC13)</b>	
<b>Product Categories</b>	Fuels (PC13)

Product (Sub-)Categories	Liquid: Garden equipment - Refuelling (PC13_4)		
Product (article) characteristics			
Concentration of substance in product: Covers concentrations up to 85 %			
Amount used, frequency and duration of use/exposure			
Amounts used: Amount per use 750 g			
Duration: Exposure duration 0.05 h/event			
Frequency: Covers use up to 25 times per year			
Other conditions affecting consumers exposure			
Room size: Covers use in a one car garage (>34 m³) under typical ventilation.			
Temperature: Covers use at ambient temperatures.			
Additional conditions human health Covers skin contact area up to 210 cm²			

7.3 Exposure estimation and reference to its source

7.3. CS1: Environment Contributing Scenario: Covered by (ERC9b)

protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
freshwater	0.0236 mg/L	N/A	0.00246
freshwater sediment	0.00905 mg/kg bw/day	N/A	0.00246
marine water	0.0003 mg/L	N/A	0.00038
marine sediment	0.0015 mg/kg bw/day	N/A	0.00038
marine sediment	0.0015 mg/kg bw/day	N/A	0.00676

7.2. CS2: Consumer Contributing Scenario: Consumer (PC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.187 mg/m³	N/A	0.00164
inhalative, local, short-term	1.3 mg/m³	N/A	0.0114
dermal, systemic, long-term	0.117 mg/kg bw/day	N/A	8.1E-05
combined routes, systemic, long-term	N/A	N/A	0.0114

7.2. CS3: Consumer Contributing Scenario: Consumer (PC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.0612 mg/m³	N/A	0.000544

inhalative, local, short-term	0.434 mg/m <sup>3</sup>	N/A	0.0038
dermal, systemic, long-term	0.117 mg/kg bw/day	N/A	8.1E-05
combined routes, systemic, long-term	N/A	N/A	0.00388

## 7.2. CS4: Consumer Contributing Scenario: Consumer (PC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.0764 mg/m <sup>3</sup>	N/A	0.00067
inhalative, local, short-term	1.09 mg/m <sup>3</sup>	N/A	0.00956
dermal, systemic, long-term	4.13 mg/kg bw/day	N/A	0.0014
combined routes, systemic, long-term	N/A	N/A	0.0109

## 7.2. CS5: Consumer Contributing Scenario: Consumer (PC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.079 mg/m <sup>3</sup>	N/A	0.000692
inhalative, local, short-term	1.12 mg/m <sup>3</sup>	N/A	0.00982
dermal, systemic, long-term	0.117 mg/kg bw/day	N/A	3.98E-05
combined routes, systemic, long-term	N/A	N/A	0.00986

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

### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 8. ES 8 Consumer use; Various products (PC1, PC3, PC8, PC18, PC23)

### 8.1 TITLE SECTION

Exposure Scenario name	Cosumer other uses
Date - Version	23/07/2019 - 1.0
Life Cycle Stage	Consumer use
Main user group	Consumer uses
Sector(s) of use	Consumer uses (SU21)
Product Categories	Adhesives, sealants (PC1) - Air care products (PC3) - Biocidal products (PC8) - Ink and toners (PC18) - Leather treatment products (PC23) - Lubricants, greases, release products (PC24) - Plant protection products (PC27) - Polishes and wax blends (PC31) - Textile dyes and impregnating products (PC34)

### Environment Contributing Scenario

CS1 Covered by	ERC8a - ERC8d
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### Consumer Contributing Scenario

CS2 Consumer	PC1 - PC1_1
CS3 Consumer	PC1 - PC1_3
CS4 Consumer	PC1 - PC1_4
CS5 Consumer	PC3 - PC3_1
CS6 Consumer	PC3 - PC3_2
CS7 Consumer	PC8 - PC35_1, PC8_1
CS8 Consumer	PC8 - PC8_2, PC35_2
CS9 Consumer	PC8 - PC8_3, PC35_3
CS10 Consumer	PC18
CS11 Consumer	PC23 - PC23_1, PC31_1
CS12 Consumer	PC23 - PC23_2, PC31_2
CS13 Consumer	PC24 - PC16_1, PC17_1, PC24_1, 36
CS14 Consumer	PC27
CS15 Consumer	PC31 - PC23_1, PC31_1
CS16 Consumer	PC31 - PC23_2, PC31_2

## 8.2 Conditions of use affecting exposure

### 8.2. CS1: Environment Contributing Scenario: Covered by (ERC8a, ERC8d)

Environmental release categories	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) - Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8a, ERC8d)
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### Product (article) characteristics

#### Physical form of product:

Liquid, vapour pressure > 10 kPa at STP

### Conditions and measures related to treatment of waste (including article waste)

## Waste treatment

Hazardous waste incineration	Waste - minimum efficiency of: 99.8 %
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### *Other conditions affecting environmental exposure*

**Local marine water dilution factor:** 100

**Local freshwater dilution factor:** 10

**Receiving surface water flow:** 2000 m<sup>3</sup>/day

#### 8.2. CS2: Consumer Contributing Scenario: Consumer (PC1)

<b>Product Categories</b>	Adhesives, sealants (PC1)
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<b>Product (Sub-)Categories</b>	Glues, hobby use (PC1_1)
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### *Product (article) characteristics*

**Concentration of substance in product:**

Covers concentrations up to 70 %

### *Amount used, frequency and duration of use/exposure*

**Amounts used:**

Amount per use 50 g

**Duration:**

Exposure duration 4 h/event

**Frequency:**

Covers exposure up to 1 events per day

### *Other conditions affecting consumers exposure*

**Room size:** Covers use in room size of 20 m<sup>3</sup>

**Additional conditions human health**

Covers skin contact area up to 35 cm<sup>2</sup>

#### 8.2. CS3: Consumer Contributing Scenario: Consumer (PC1)

<b>Product Categories</b>	Adhesives, sealants (PC1)
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<b>Product (Sub-)Categories</b>	Glue from spray (PC1_3)
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### *Product (article) characteristics*

**Concentration of substance in product:**

Covers concentrations up to 30 %

### *Amount used, frequency and duration of use/exposure*

**Amounts used:**

Amount per use 50 g

**Duration:**

Exposure duration 4 h/event

**Frequency:**

Covers exposure up to 6 times per year

### *Other conditions affecting consumers exposure*

**Room size:** Covers use in room size of 20 m<sup>3</sup>

**Additional conditions human health**

Covers skin contact area up to 35 cm<sup>2</sup>

#### 8.2. CS4: Consumer Contributing Scenario: Consumer (PC1)

<b>Product Categories</b>	Adhesives, sealants (PC1)
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<b>Product (Sub-)Categories</b>	Sealants (PC1_4)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 30 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 1 h/event	
<b>Frequency:</b> Covers exposure up to 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup>	
<b>Additional conditions human health</b> Covers skin contact area up to 35 cm <sup>2</sup>	
<b>8.2. CS5: Consumer Contributing Scenario: Consumer (PC3)</b>	
<b>Product Categories</b>	Air care products (PC3)
<b>Product (Sub-)Categories</b>	Air care, instant action (aerosol sprays) (PC3_1)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 40 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 0.3 h/event	
<b>Frequency:</b> Covers exposure up to 4 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup>	
<b>Additional conditions human health</b> Covers skin contact area up to 35 cm <sup>2</sup>	
<b>8.2. CS6: Consumer Contributing Scenario: Consumer (PC3)</b>	
<b>Product Categories</b>	Air care products (PC3)
<b>Product (Sub-)Categories</b>	Air care, continuous action (solid and liquid) (PC3_2)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 10 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 8 h/event	
<b>Frequency:</b>	

Covers exposure up to 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup>	
<b>Additional conditions human health</b> Covers skin contact area up to 35 cm <sup>2</sup>	
<b>8.2. CS7: Consumer Contributing Scenario: Consumer (PC8)</b>	
<b>Product Categories</b>	Biocidal products (PC8)
<b>Product (Sub-)Categories</b>	Laundry and dish washing products (PC35_1, PC8_1)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 5 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 15 g	
<b>Duration:</b> Exposure duration 0.5 h/event	
<b>Frequency:</b> Covers exposure up to 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup>	
<b>Additional conditions human health</b> Covers skin contact area up to 857 cm <sup>2</sup>	
<b>8.2. CS8: Consumer Contributing Scenario: Consumer (PC8)</b>	
<b>Product Categories</b>	Biocidal products (PC8)
<b>Product (Sub-)Categories</b>	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) (PC8_2, PC35_2)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 5 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 0.3 h/event	
<b>Frequency:</b> Covers exposure up to 125 times per year	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup>	
<b>Additional conditions human health</b> Covers skin contact area up to 857 cm <sup>2</sup>	
<b>8.2. CS9: Consumer Contributing Scenario: Consumer (PC8)</b>	
<b>Product Categories</b>	Biocidal products (PC8)
<b>Product (Sub-)Categories</b>	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) (PC8_3, PC35_3)

<b>Product (article) characteristics</b>	
<b>Concentration of substance in product:</b> Covers concentrations up to 15 %	
<b>Amount used, frequency and duration of use/exposure</b>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 0.2 h/event	
<b>Frequency:</b> Covers exposure up to 125 times per year	
<b>Other conditions affecting consumers exposure</b>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup>	
<b>Ventilation rate:</b> Covers use under typical household ventilation.	
<b>Additional conditions human health</b> Covers skin contact area up to 428 cm <sup>2</sup>	
<b>8.2. CS10: Consumer Contributing Scenario: Consumer (PC18)</b>	
<b>Product Categories</b>	Ink and toners (PC18)
<b>Product (article) characteristics</b>	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<b>Amount used, frequency and duration of use/exposure</b>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 8 h/event	
<b>Frequency:</b> Covers exposure up to 1 uses per day	
<b>Other conditions affecting consumers exposure</b>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup>	
<b>Ventilation rate:</b> Covers use under typical household ventilation.	
<b>Additional conditions human health</b> Covers skin contact area up to 71 cm <sup>2</sup>	
<b>8.2. CS11: Consumer Contributing Scenario: Consumer (PC23)</b>	
<b>Product Categories</b>	Leather treatment products (PC23)
<b>Product (Sub-)Categories</b>	Polishes, wax/cream (floor, furniture, shoes) (PC23_1, PC31_1)
<b>Product (article) characteristics</b>	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<b>Amount used, frequency and duration of use/exposure</b>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 1.2 h/event	
<b>Frequency:</b> Covers exposure up to 29 times per year	



### *Other conditions affecting consumers exposure*

**Room size:** Covers use in room size of 20 m<sup>3</sup>

**Ventilation rate:** Covers use under typical household ventilation.

#### **Additional conditions human health**

Covers skin contact area up to 430 cm<sup>2</sup>

### **8.2. CS12: Consumer Contributing Scenario: Consumer (PC23)**

<b>Product Categories</b>	Leather treatment products (PC23)
<b>Product (Sub-)Categories</b>	Polishes, spray (furniture, shoes) (PC23_2, PC31_2)

### *Product (article) characteristics*

#### **Concentration of substance in product:**

Covers concentrations up to 20 %

### *Amount used, frequency and duration of use/exposure*

#### **Amounts used:**

Amount per use 50 g

#### **Duration:**

Exposure duration 0.3 h/event

#### **Frequency:**

Covers exposure up to 8 times per year

### *Other conditions affecting consumers exposure*

**Room size:** Covers use in room size of 20 m<sup>3</sup>

**Ventilation rate:** Covers use under typical household ventilation.

#### **Additional conditions human health**

Covers skin contact area up to 430 cm<sup>2</sup>

### **8.2. CS13: Consumer Contributing Scenario: Consumer (PC24)**

<b>Product Categories</b>	Lubricants, greases, release products (PC24)
<b>Product (Sub-)Categories</b>	Liquids (PC16_1, PC17_1, PC24_1, 36)

### *Product (article) characteristics*

#### **Concentration of substance in product:**

Covers concentrations up to 20 %

### *Amount used, frequency and duration of use/exposure*

#### **Amounts used:**

Amount per use 50 g

#### **Duration:**

Exposure duration 0.2 h/event

#### **Frequency:**

Covers exposure up to 4 times per year

### *Other conditions affecting consumers exposure*

**Room size:** Covers use in room size of 20 m<sup>3</sup>

**Ventilation rate:** Covers use under typical household ventilation.

#### **Additional conditions human health**

Covers skin contact area up to 468 cm<sup>2</sup>

### **8.2. CS14: Consumer Contributing Scenario: Consumer (PC27)**

<b>Product Categories</b>	Plant protection products (PC27)
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### *Product (article) characteristics*

<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 0.3 h/event	
<b>Frequency:</b> Covers exposure up to 29 times per year	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup> <b>Ventilation rate:</b> Covers use under typical household ventilation.	
<b>Additional conditions human health</b> Covers skin contact area up to 857 cm <sup>2</sup>	
<b>8.2. CS15: Consumer Contributing Scenario: Consumer (PC31)</b>	
<b>Product Categories</b>	Polishes and wax blends (PC31)
<b>Product (Sub-)Categories</b>	Polishes, wax/cream (floor, furniture, shoes) (PC23_1, PC31_1)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 1.2 h/event	
<b>Frequency:</b> Covers exposure up to 29 times per year	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in room size of 20 m <sup>3</sup> <b>Ventilation rate:</b> Covers use under typical household ventilation.	
<b>Additional conditions human health</b> Covers skin contact area up to 430 cm <sup>2</sup>	
<b>8.2. CS16: Consumer Contributing Scenario: Consumer (PC31)</b>	
<b>Product Categories</b>	Polishes and wax blends (PC31)
<b>Product (Sub-)Categories</b>	Polishes, spray (furniture, shoes) (PC23_2, PC31_2)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 10 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 50 g	
<b>Duration:</b> Exposure duration 0.3 h/event	
<b>Frequency:</b> Covers exposure up to 8 times per year	

### *Other conditions affecting consumers exposure*

**Room size:** Covers use in room size of 20 m<sup>3</sup>

**Ventilation rate:** Covers use under typical household ventilation.

### **Additional conditions human health**

Covers skin contact area up to 430 cm<sup>2</sup>

## 8.3 Exposure estimation and reference to its source

### 8.3. CS1: Environment Contributing Scenario: Covered by (ERC8a, ERC8d)

protection target	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
wastewater treatment plant microbes	0.273 mg/L	N/A	0.000471
freshwater	0.0297 mg/L	N/A	0.0309
freshwater sediment	0.114 mg/kg bw/day	N/A	0.031
marine water	0.00304 mg/L	N/A	0.00385
marine sediment	0.0116 mg/kg bw/day	N/A	0.00383
soil	0.116 mg/kg bw/day	N/A	0.00676

### 8.2. CS2: Consumer Contributing Scenario: Consumer (PC1)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	111 mg/m <sup>3</sup>	N/A	0.973
inhalative, local, short-term	111 mg/m <sup>3</sup>	N/A	0.973
dermal, systemic, long-term	3.28 mg/kg bw/day	N/A	0.0159
combined routes, systemic, long-term	N/A	N/A	0.989

### 8.2. CS3: Consumer Contributing Scenario: Consumer (PC1)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.788 mg/m <sup>3</sup>	N/A	0.00682
inhalative, local, short-term	47.3 mg/m <sup>3</sup>	N/A	0.414
dermal, systemic, long-term	1.4 mg/kg bw/day	N/A	0.000112
combined routes, systemic, long-term	N/A	N/A	0.212

### 8.2. CS4: Consumer Contributing Scenario: Consumer (PC1)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
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inhalative, systemic, long-term	23.5 mg/m <sup>3</sup>	N/A	0.206
inhalative, local, short-term	23.5 mg/m <sup>3</sup>	N/A	0.206
dermal, systemic, long-term	1.4 mg/kg bw/day	N/A	0.00679
combined routes, systemic, long-term	N/A	N/A	0.212

## 8.2. CS5: Consumer Contributing Scenario: Consumer (PC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	38.7 mg/m <sup>3</sup>	N/A	0.339
inhalative, local, short-term	38.7 mg/m <sup>3</sup>	N/A	0.339
dermal, systemic, long-term	7.51 mg/kg bw/day	N/A	0.0364
combined routes, systemic, long-term	N/A	N/A	0.375

## 8.2. CS6: Consumer Contributing Scenario: Consumer (PC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	17.1 mg/m <sup>3</sup>	N/A	0.15
inhalative, local, short-term	17.1 mg/m <sup>3</sup>	N/A	0.15
dermal, systemic, long-term	0.469 mg/kg bw/day	N/A	0.00227
combined routes, systemic, long-term	N/A	N/A	0.152

## 8.2. CS7: Consumer Contributing Scenario: Consumer (PC8)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.672 mg/m <sup>3</sup>	N/A	0.00589
inhalative, local, short-term	0.672 mg/m <sup>3</sup>	N/A	0.00589
dermal, systemic, long-term	5.63 mg/kg bw/day	N/A	0.000273
combined routes, systemic, long-term	N/A	N/A	0.00616

## 8.2. CS8: Consumer Contributing Scenario: Consumer (PC8)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.543 mg/m <sup>3</sup>	N/A	0.00476
inhalative, local, short-term	1.55 mg/m <sup>3</sup>	N/A	0.0135

dermal, systemic, long-term	5.63 mg/kg bw/day	N/A	0.00956
combined routes, systemic, long-term	N/A	N/A	0.0231

## 8.2. CS9: Consumer Contributing Scenario: Consumer (PC8)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.885 mg/m <sup>3</sup>	N/A	0.00776
inhalative, local, short-term	2.52 mg/m <sup>3</sup>	N/A	0.0221
dermal, systemic, long-term	8.43 mg/kg bw/day	N/A	0.0143
combined routes, systemic, long-term	N/A	N/A	0.0364

## 8.2. CS10: Consumer Contributing Scenario: Consumer (PC18)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	86 mg/m <sup>3</sup>	N/A	0.754
inhalative, local, short-term	86 mg/m <sup>3</sup>	N/A	0.754
dermal, systemic, long-term	4.69 mg/kg bw/day	N/A	0.0227
combined routes, systemic, long-term	N/A	N/A	0.777

## 8.2. CS11: Consumer Contributing Scenario: Consumer (PC23)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	3.62 mg/m <sup>3</sup>	N/A	0.0317
inhalative, local, short-term	45.3 mg/m <sup>3</sup>	N/A	0.397
dermal, systemic, long-term	28.2 mg/kg bw/day	N/A	0.0109
combined routes, systemic, long-term	N/A	N/A	0.408

## 8.2. CS12: Consumer Contributing Scenario: Consumer (PC23)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.136 mg/m <sup>3</sup>	N/A	0.00119
inhalative, local, short-term	6.24 mg/m <sup>3</sup>	N/A	0.0547
dermal, systemic, long-term	1.23 mg/kg bw/day	N/A	6.5E-05
combined routes, systemic, long-term	N/A	N/A	0.0295

## 8.2. CS13: Consumer Contributing Scenario: Consumer (PC24)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.0368 mg/m <sup>3</sup>	N/A	0.000322
inhalative, local, short-term	3.36 mg/m <sup>3</sup>	N/A	0.0294
dermal, systemic, long-term	1.23 mg/kg bw/day	N/A	6.5E-05
combined routes, systemic, long-term	N/A	N/A	0.0295

## 8.2. CS14: Consumer Contributing Scenario: Consumer (PC27)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	15.7 mg/m <sup>3</sup>	N/A	0.137
inhalative, local, short-term	15.7 mg/m <sup>3</sup>	N/A	0.137
dermal, systemic, long-term	11.2 mg/kg bw/day	N/A	0.0543
combined routes, systemic, long-term	N/A	N/A	0.226
oral, systemic, long-term	131.2 mg/kg bw/day	N/A	0.0344

## 8.2. CS15: Consumer Contributing Scenario: Consumer (PC31)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	3.62 mg/m <sup>3</sup>	N/A	0.0317
inhalative, local, short-term	45.3 mg/m <sup>3</sup>	N/A	0.397
dermal, systemic, long-term	28.2 mg/kg bw/day	N/A	0.0109
combined routes, systemic, long-term	N/A	N/A	0.408

## 8.2. CS16: Consumer Contributing Scenario: Consumer (PC31)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.0684 mg/m <sup>3</sup>	N/A	0.0006
inhalative, local, short-term	3.12 mg/m <sup>3</sup>	N/A	0.0273
dermal, systemic, long-term	5.65 mg/kg bw/day	N/A	0.000597
combined routes, systemic, long-term	N/A	N/A	0.0279

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

### **Guidance to check compliance with the exposure scenario:**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

# Exposure Scenario, 19/07/2019

Substance identity	
Chemical name	ETHYLENE GLYCOL
CAS No.	107-21-1
EINECS No.	203-473-3

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1. **ES 1** Use at industrial site
2. **ES 2** Widespread use by professional workers
3. **ES 3** Widespread use by professional workers
4. **ES 4** Consumer use; Various products (PC9a, PC1, PC4, PC8, PC15)



1. ES 1 Use at industrial site	
1.1 TITLE SECTION	
Exposure Scenario name	Use in cleaning agents
Date - Version	18/07/2019 - 1.0
Life Cycle Stage	Use at industrial site
Main user group	Industrial uses
Sector(s) of use	Industrial uses (SU3)
Environment Contributing Scenario	
CS1 Covered by	ERC4
Worker Contributing Scenario	
CS2 Industrial	PROC1
CS3 Industrial	PROC2
CS4 Industrial	PROC3
CS5 Industrial	PROC4
CS6 Industrial	PROC8b
CS7 Industrial	PROC7
CS8 Industrial	PROC8a
CS9 Industrial	PROC10
CS10 Industrial	PROC13
1.2 Conditions of use affecting exposure	
1.2. CS1: Environment Contributing Scenario: Covered by (ERC4)	
Environmental release categories	Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)
<i>Product (article) characteristics</i>	
Physical form of product: Liquid	
Vapour pressure: 0.123 hPa	
1.2. CS2: Worker Contributing Scenario: Industrial (PROC1)	
Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
<i>Product (article) characteristics</i>	
Concentration of substance in product: Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
Duration: Covers daily exposures up to 8 hours	
Frequency: Use frequency 240 days per year	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
Personal protection	

Wear suitable gloves tested to EN374.

### *Other conditions affecting worker exposure*

Indoor use

## **1.2. CS3: Worker Contributing Scenario: Industrial (PROC2)**

### **Process Categories**

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

### *Product (article) characteristics*

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

#### **Frequency:**

Use frequency 240 days per year

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

#### **Personal protection**

Wear suitable gloves tested to EN374.

### *Other conditions affecting worker exposure*

Indoor use

## **1.2. CS4: Worker Contributing Scenario: Industrial (PROC3)**

### **Process Categories**

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*

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

#### **Frequency:**

Use frequency 240 days per year

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

#### **Personal protection**

Wear suitable gloves tested to EN374.

### *Other conditions affecting worker exposure*

Indoor use

## **1.2. CS5: Worker Contributing Scenario: Industrial (PROC4)**

### **Process Categories**

Chemical production where opportunity for exposure arises (PROC4)

### *Product (article) characteristics*

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

#### **Frequency:**

Use frequency 240 days per year

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

<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>1.2. CS6: Worker Contributing Scenario: Industrial (PROC8b)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Frequency:</b> Use frequency 240 days per year	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>1.2. CS7: Worker Contributing Scenario: Industrial (PROC7)</b>	
<b>Process Categories</b>	Industrial spraying (PROC7)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 1 L/min	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Frequency:</b> Use frequency 5 days per week	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b>	
Wear suitable gloves tested to EN374.	DermaI - minimum efficiency of: 90 %
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>Room size:</b> Covers use in room size of > 1000 m <sup>3</sup>	
<b>1.2. CS8: Worker Contributing Scenario: Industrial (PROC8a)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	

<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours <b>Frequency:</b> Use frequency 240 days per year	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>Ventilation rate:</b> > 90 %	
<b>1.2. CS9: Worker Contributing Scenario: Industrial (PROC10)</b>	
<b>Process Categories</b>	Roller application or brushing (PROC10)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours <b>Frequency:</b> Use frequency 240 days per year	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374. Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>1.2. CS10: Worker Contributing Scenario: Industrial (PROC13)</b>	
<b>Process Categories</b>	Treatment of articles by dipping and pouring (PROC13)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours <b>Frequency:</b> Use frequency 240 days per year	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374. Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>1.3 Exposure estimation and reference to its source</b>	
<b>1.3. CS2: Worker Contributing Scenario: Industrial (PROC1)</b>	

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.001
inhalative, local, long-term	N/A	EASY TRA v2.0	0.001
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.003
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.004

### 1.3. CS3: Worker Contributing Scenario: Industrial (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.07
inhalative, local, long-term	N/A	EASY TRA v2.0	0.07
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.01
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.08

### 1.3. CS4: Worker Contributing Scenario: Industrial (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.22
inhalative, local, long-term	N/A	EASY TRA v2.0	0.22
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.003
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.223

### 1.3. CS5: Worker Contributing Scenario: Industrial (PROC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.37
inhalative, local, long-term	N/A	EASY TRA v2.0	0.37
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.06
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.43

### 1.3. CS6: Worker Contributing Scenario: Industrial (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.37

inhalative, local, long-term	N/A	EASY TRA v2.0	0.37
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.06
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.43

### 1.3. CS7: Worker Contributing Scenario: Industrial (PROC7)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.28
inhalative, local, long-term	N/A	EASY TRA v2.0	0.28
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.52
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.8

### 1.3. CS8: Worker Contributing Scenario: Industrial (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.37
inhalative, local, long-term	N/A	EASY TRA v2.0	0.37
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.06
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.43

### 1.3. CS9: Worker Contributing Scenario: Industrial (PROC10)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.74
inhalative, local, long-term	N/A	EASY TRA v2.0	0.74
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.03
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.77

### 1.3. CS10: Worker Contributing Scenario: Industrial (PROC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.74
inhalative, local, long-term	N/A	EASY TRA v2.0	0.74
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.01

combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.75
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## 1.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 2. ES 2 Widespread use by professional workers

### 2.1 TITLE SECTION

Exposure Scenario name	Use in cleaning agents
Date - Version	19/07/2019 - 1.0
Life Cycle Stage	Widespread use by professional workers
Main user group	Professional uses
Sector(s) of use	Professional uses (SU22)

#### Environment Contributing Scenario

CS1 Covered by	ERC8a - ERC8d
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#### Worker Contributing Scenario

CS2 General use from professional operators	PROC1
CS3 General use from professional operators	PROC2
CS4 General use from professional operators	PROC3
CS5 General use from professional operators	PROC4
CS6 General use from professional operators	PROC8b
CS7 General use from professional operators	PROC8a
CS8 General use from professional operators	PROC10
CS9 General use from professional operators	PROC11
CS10 General use from professional operators	PROC13

## 2.2 Conditions of use affecting exposure

### 2.2. CS1: Environment Contributing Scenario: Covered by (ERC8a, ERC8d)

Environmental release categories	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) - Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8a, ERC8d)
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#### *Product (article) characteristics*

##### Physical form of product:

Liquid

##### Vapour pressure:

0.123 hPa

### 2.2. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)

Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
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#### *Product (article) characteristics*

##### Physical form of product:

Liquid

##### Concentration of substance in product:

Covers percentage substance in the product up to 100 %.

#### *Amount used, frequency and duration of use/exposure*



<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Frequency:</b> Use frequency 240 days per year	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374. Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>2.2. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)</b>	
<b>Process Categories</b>	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Frequency:</b> Use frequency 240 days per year	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374. Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>2.2. CS4: Worker Contributing Scenario: General use from professional operators (PROC3)</b>	
<b>Process Categories</b>	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Frequency:</b> Use frequency 240 days per year	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374. Use suitable eye protection.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	

## 2.2. CS5: Worker Contributing Scenario: General use from professional operators (PROC4)

Process Categories	Chemical production where opportunity for exposure arises (PROC4)
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### *Product (article) characteristics*

#### **Physical form of product:**

Liquid

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

#### **Frequency:**

Use frequency 240 days per year

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

#### **Personal protection**

Wear suitable gloves tested to EN374.

Use suitable eye protection.

### *Other conditions affecting worker exposure*

Indoor use

## 2.2. CS6: Worker Contributing Scenario: General use from professional operators (PROC8b)

Process Categories	Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)
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### *Product (article) characteristics*

#### **Physical form of product:**

Liquid

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

#### **Frequency:**

Use frequency 240 days per year

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

#### **Personal protection**

Wear suitable gloves tested to EN374.

Use suitable eye protection.

### *Other conditions affecting worker exposure*

Indoor use

## 2.2. CS7: Worker Contributing Scenario: General use from professional operators (PROC8a)

Process Categories	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)
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### *Product (article) characteristics*

#### **Physical form of product:**

Liquid

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

**Duration:**

Covers daily exposures up to 8 hours

**Frequency:**

Use frequency 240 days per year

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

Wear suitable gloves tested to EN374.

Use suitable eye protection.

*Other conditions affecting worker exposure*

Indoor use

**Ventilation rate:** 80 %**2.2. CS8: Worker Contributing Scenario: General use from professional operators (PROC10)****Process Categories**

Roller application or brushing (PROC10)

*Product (article) characteristics***Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

*Amount used, frequency and duration of use/exposure***Duration:**

Covers daily exposures up to 8 hours

**Frequency:**

Use frequency 240 days per year

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

Wear suitable gloves tested to EN374.

Use suitable eye protection.

Wear suitable respiratory protection.

Inhalation - minimum efficiency of: 80 %

*Other conditions affecting worker exposure*

Indoor use

**Ventilation rate:** 80 %**2.2. CS9: Worker Contributing Scenario: General use from professional operators (PROC11)****Process Categories**

Non industrial spraying (PROC11)

*Product (article) characteristics***Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

*Amount used, frequency and duration of use/exposure***Amounts used:**

Amount per use 0.05 L/min

**Duration:**

Exposure duration 180 min

**Frequency:**

Use frequency < 5 days per week

### *Technical and organisational conditions and measures*

#### **Technical and organisational measures**

Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

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

#### **Personal protection**

Wear suitable gloves tested to EN374. Use suitable eye protection.	Inhalation - minimum efficiency of: 90 %
Wear suitable respiratory protection.	Inhalation - minimum efficiency of: 80 %

### *Other conditions affecting worker exposure*

Indoor use

**Room size:** Covers use in room size of > 100 m<sup>3</sup>

**Ventilation rate:** 80 %

## **2.2. CS10: Worker Contributing Scenario: General use from professional operators (PROC13)**

<b>Process Categories</b>	Treatment of articles by dipping and pouring (PROC13)
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### *Product (article) characteristics*

#### **Physical form of product:**

Liquid

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

#### **Frequency:**

Use frequency < 240 days per year

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

#### **Personal protection**

Wear suitable gloves tested to EN374. Use suitable eye protection.	Inhalation - minimum efficiency of: 90 %
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### *Other conditions affecting worker exposure*

Indoor use

## **2.3 Exposure estimation and reference to its source**

### **2.3. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.001
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.001
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.003

dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.004
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### 2.3. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.37
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.37
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.01
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.38

### 2.3. CS4: Worker Contributing Scenario: General use from professional operators (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.22
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.22
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.003
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.223

### 2.3. CS5: Worker Contributing Scenario: General use from professional operators (PROC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.74
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.74
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.006
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.8

### 2.3. CS6: Worker Contributing Scenario: General use from professional operators (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.74
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.74
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.06
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.8

### 2.3. CS7: Worker Contributing Scenario: General use from professional operators (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.37
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.37
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.13
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.5

### 2.3. CS8: Worker Contributing Scenario: General use from professional operators (PROC10)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.37
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.37
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.3
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.4

### 2.3. CS9: Worker Contributing Scenario: General use from professional operators (PROC11)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.4
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.4
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.51
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.91

### 2.3. CS10: Worker Contributing Scenario: General use from professional operators (PROC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.74
dermal, local, long-term	N/A	ECETOC TRA worker v2.0	0.74
inhalative, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.01
dermal, systemic, long-term	N/A	ECETOC TRA worker v2.0	0.75

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

**Guidance to check compliance with the exposure scenario:**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

### 3. ES 3 Widespread use by professional workers

#### 3.1 TITLE SECTION

Exposure Scenario name	Use in antifreeze products
Date - Version	19/07/2019 - 1.0
Life Cycle Stage	Widespread use by professional workers
Main user group	Professional uses
Sector(s) of use	Professional uses (SU22)

#### Environment Contributing Scenario

CS1 Covered by	ERC8d
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#### Worker Contributing Scenario

CS2 General use from professional operators	PROC1
CS3 General use from professional operators	PROC2
CS4 General use from professional operators	PROC8a
CS5 General use from professional operators	PROC8b
CS6 General use from professional operators	PROC11

### 3.2 Conditions of use affecting exposure

#### 3.2. CS1: Environment Contributing Scenario: Covered by (ERC8d)

Environmental release categories	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)
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#### *Product (article) characteristics*

##### Physical form of product:

Liquid

##### Vapour pressure:

0.123 hPa

#### 3.2. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)

Process Categories	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
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#### *Product (article) characteristics*

##### Concentration of substance in product:

Covers percentage substance in the product up to 100 %.

#### *Amount used, frequency and duration of use/exposure*

##### Duration:

Covers daily exposures up to 8 hours

##### Frequency:

Covers exposure up to 240 days per year

#### *Technical and organisational conditions and measures*

##### Technical and organisational measures

Use in contained systems

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

##### Personal protection

Wear suitable gloves tested to EN374.



<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>3.2. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)</b>	
<b>Process Categories</b>	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Frequency:</b> Covers exposure up to 240 days per year	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Use in contained systems	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>3.2. CS4: Worker Contributing Scenario: General use from professional operators (PROC8a)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Frequency:</b> Covers exposure up to 240 days per year	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Use in contained systems	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b>	
Wear suitable gloves tested to EN374.	
Wear suitable respiratory protection.	Inhalation - minimum efficiency of: 80 %
<i>Other conditions affecting worker exposure</i>	
Indoor use	
<b>Ventilation rate:</b> 80 %	
<b>3.2. CS5: Worker Contributing Scenario: General use from professional operators (PROC8b)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

### *Product (article) characteristics*

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Covers daily exposures up to 8 hours

#### **Frequency:**

Covers exposure up to 240 days per year

### *Technical and organisational conditions and measures*

#### **Technical and organisational measures**

Use in contained systems

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

#### **Personal protection**

Wear suitable gloves tested to EN374.

### *Other conditions affecting worker exposure*

Indoor use

## **3.2. CS6: Worker Contributing Scenario: General use from professional operators (PROC11)**

#### **Process Categories**

Non industrial spraying (PROC11)

### *Product (article) characteristics*

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

### *Amount used, frequency and duration of use/exposure*

#### **Duration:**

Exposure duration 180 min

#### **Frequency:**

Covers exposure up to 5 days per week

### *Technical and organisational conditions and measures*

#### **Technical and organisational measures**

Use in contained systems

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

#### **Personal protection**

Wear suitable gloves tested to EN374.

Dermal - minimum efficiency of: 90 %

### *Other conditions affecting worker exposure*

Indoor use

**Room size:** Covers use in room size of > 100 m<sup>3</sup>

## **3.3 Exposure estimation and reference to its source**

### **3.3. CS2: Worker Contributing Scenario: General use from professional operators (PROC1)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.001
inhalative, local, long-term	N/A	EASY TRA v2.0	0.001
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.003

combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.004
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### 3.3. CS3: Worker Contributing Scenario: General use from professional operators (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.37
inhalative, local, long-term	N/A	EASY TRA v2.0	0.37
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.01
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.38

### 3.3. CS4: Worker Contributing Scenario: General use from professional operators (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.37
inhalative, local, long-term	N/A	EASY TRA v2.0	0.37
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.13
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.5

### 3.3. CS5: Worker Contributing Scenario: General use from professional operators (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.74
inhalative, local, long-term	N/A	EASY TRA v2.0	0.74
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.06
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.8

### 3.3. CS6: Worker Contributing Scenario: General use from professional operators (PROC11)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	EASY TRA v2.0	0.4
inhalative, local, long-term	N/A	EASY TRA v2.0	0.4
dermal, systemic, long-term	N/A	EASY TRA v2.0	0.51
combined routes, systemic, long-term	N/A	EASY TRA v2.0	0.91

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

**Guidance to check compliance with the exposure scenario:**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

## 4. ES 4 Consumer use; Various products (PC9a, PC1, PC4, PC8, PC15)

### 4.1 TITLE SECTION

Exposure Scenario name	Consumer goods
Date - Version	19/07/2019 - 1.0
Life Cycle Stage	Consumer use
Main user group	Consumer uses
Product Categories	Coatings and paints, thinners, paint removers (PC9a) - Adhesives, sealants (PC1) - Anti-freeze and de-icing products (PC4) - Biocidal products (PC8) - Non-metal surface treatment products (PC15) - Heat transfer fluids (PC16) - Hydraulic fluids (PC17) - Ink and toners (PC18) - Leather treatment products (PC23) - Polishes and wax blends (PC31) - Polymer preparations and compounds (PC32) - Textile dyes and impregnating products (PC34) - Washing and cleaning products (PC35)

### Environment Contributing Scenario

CS1 Covered by	ERC8a - ERC8c - ERC8d - ERC8f - ERC9a - ERC9b
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### Consumer Contributing Scenario

CS2 Consumer	PC1
CS3 Consumer	PC4 - PC16 - PC17 - PC4_1
CS4 Consumer	PC4 - PC4_2
CS5 Consumer	PC9a - PC15 - PC9a_2, PC15_2
CS6 Consumer	PC8
CS7 Consumer	PC18
CS8 Consumer	PC31
CS9 Consumer	PC32
CS10 Consumer	PC35 - PC8_2, PC35_2
CS11 Consumer	PC35 - PC8_3, PC35_3
CS12 Consumer	PC15 - PC23 - PC34 - PC9a_1, PC15_1

## 4.2 Conditions of use affecting exposure

### 4.2. CS1: Environment Contributing Scenario: Covered by (ERC8a, ERC8c, ERC8d, ERC8f, ERC9a, ERC9b)

Environmental release categories	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) - Widespread use leading to inclusion into/onto article (indoor) - Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) - Widespread use leading to inclusion into/onto article (outdoor) - Widespread use of functional fluid (indoor) - Widespread use of functional fluid (outdoor) (ERC8a, ERC8c, ERC8d, ERC8f, ERC9a, ERC9b)
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### Product (article) characteristics

#### Physical form of product:

Liquid

#### Concentration of substance in product:

Covers percentage substance in the product up to 100 %.

### 4.2. CS2: Consumer Contributing Scenario: Consumer (PC1)

Product Categories	Adhesives, sealants (PC1)
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<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 0.75 %	
<b>4.2. CS3: Consumer Contributing Scenario: Consumer (PC4, PC16, PC17)</b>	
<b>Product Categories</b>	Anti-freeze and de-icing products - Heat transfer fluids - Hydraulic fluids (PC4, PC16, PC17)
<b>Product (Sub-)Categories</b>	Washing car window (PC4_1)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 45 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Exposure duration < 15 min	
<b>4.2. CS4: Consumer Contributing Scenario: Consumer (PC4)</b>	
<b>Product Categories</b>	Anti-freeze and de-icing products (PC4)
<b>Product (Sub-)Categories</b>	Pouring into radiator (PC4_2)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 100 %.	
<b>4.2. CS5: Consumer Contributing Scenario: Consumer (PC9a, PC15)</b>	
<b>Product Categories</b>	Coatings and paints, thinners, paint removers - Non-metal surface treatment products (PC9a, PC15)
<b>Product (Sub-)Categories</b>	Solvent rich, high solid, water borne paint (PC9a_2, PC15_2)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 10 %	
<b>4.2. CS6: Consumer Contributing Scenario: Consumer (PC8)</b>	
<b>Product Categories</b>	Biocidal products (PC8)
<b>4.2. CS7: Consumer Contributing Scenario: Consumer (PC18)</b>	
<b>Product Categories</b>	Ink and toners (PC18)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 5 %.	
<b>4.2. CS8: Consumer Contributing Scenario: Consumer (PC31)</b>	
<b>Product Categories</b>	Polishes and wax blends (PC31)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers concentrations up to 10 %	
<b>4.2. CS9: Consumer Contributing Scenario: Consumer (PC32)</b>	
<b>Product Categories</b>	Polymer preparations and compounds (PC32)
<i>Product (article) characteristics</i>	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 5 %.	
<b>4.2. CS10: Consumer Contributing Scenario: Consumer (PC35)</b>	

<b>Product Categories</b>	Washing and cleaning products (PC35)
<b>Product (Sub-)Categories</b>	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) (PC8_2, PC35_2)

#### *Product (article) characteristics*

#### **Concentration of substance in product:**

Covers concentrations up to 20 %

#### **4.2. CS11: Consumer Contributing Scenario: Consumer (PC35)**

<b>Product Categories</b>	Washing and cleaning products (PC35)
<b>Product (Sub-)Categories</b>	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) (PC8_3, PC35_3)

#### *Product (article) characteristics*

#### **Concentration of substance in product:**

Covers percentage substance in the product up to 5 %.

#### **4.2. CS12: Consumer Contributing Scenario: Consumer (PC15, PC23, PC34)**

<b>Product Categories</b>	Non-metal surface treatment products - Leather treatment products - Textile dyes and impregnating products (PC15, PC23, PC34)
<b>Product (Sub-)Categories</b>	Waterborne latex wall paint (PC9a_1, PC15_1)

### **4.3 Exposure estimation and reference to its source**

#### **4.2. CS2: Consumer Contributing Scenario: Consumer (PC1)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0.59
dermal, systemic, long-term	N/A	N/A	0.005
combined routes, systemic, long-term	N/A	N/A	0.505

#### **4.2. CS3: Consumer Contributing Scenario: Consumer (PC4, PC16, PC17)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0.28
dermal, systemic, long-term	N/A	N/A	0.08
combined routes, systemic, long-term	N/A	N/A	0.36

#### **4.2. CS4: Consumer Contributing Scenario: Consumer (PC4)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0
dermal, systemic, long-term	N/A	N/A	0.09
combined routes, systemic, long-term	N/A	N/A	0.09

#### 4.2. CS5: Consumer Contributing Scenario: Consumer (PC9a, PC15)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0.04
dermal, systemic, long-term	N/A	N/A	0.02
combined routes, systemic, long-term	N/A	N/A	0.06

#### 4.2. CS6: Consumer Contributing Scenario: Consumer (PC8)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0
dermal, systemic, long-term	N/A	N/A	0.006
combined routes, systemic, long-term	N/A	N/A	0.006

#### 4.2. CS7: Consumer Contributing Scenario: Consumer (PC18)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0.18
dermal, systemic, long-term	N/A	N/A	0
combined routes, systemic, long-term	N/A	N/A	0.18

#### 4.2. CS8: Consumer Contributing Scenario: Consumer (PC31)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0.56
dermal, systemic, long-term	N/A	N/A	0.04
combined routes, systemic, long-term	N/A	N/A	0.6

#### 4.2. CS9: Consumer Contributing Scenario: Consumer (PC32)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0.009
dermal, systemic, long-term	N/A	N/A	0.001
combined routes, systemic, long-term	N/A	N/A	0.01



#### 4.2. CS10: Consumer Contributing Scenario: Consumer (PC35)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0.09
dermal, systemic, long-term	N/A	N/A	0.22
combined routes, systemic, long-term	N/A	N/A	0.31

#### 4.2. CS11: Consumer Contributing Scenario: Consumer (PC35)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	N/A	N/A	0.02
dermal, systemic, long-term	N/A	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.022

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

#### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

# Exposure Scenario, 24/07/2019

Substance identity	
Chemical name	propan-2-olo; alcool isopropilico
CAS No.	67-63-0
EINECS No.	200-661-7

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1. **ES 1** Widespread use by professional workers
2. **ES 2** Widespread use by professional workers
3. **ES 3** Consumer use; Various products (PC9b, PC9a, PC3, PC4, PC8)

1. ES 1 Widespread use by professional workers	
1.1 TITLE SECTION	
Exposure Scenario name	Use in cleaning agents
Date - Version	24/07/2019 - 1.0
Life Cycle Stage	Widespread use by professional workers
Main user group	Industrial uses
Sector(s) of use	Industrial uses (SU3)
Worker Contributing Scenario	
CS1 Industrial	PROC8a
CS2 Industrial	PROC2
CS3 Industrial	PROC3
CS4 Industrial	PROC8b
CS5 Industrial	PROC4
CS6 Industrial	PROC13
CS7 Industrial	PROC10
CS8 Industrial	PROC7
1.2 Conditions of use affecting exposure	
1.2. CS1: Worker Contributing Scenario: Industrial (PROC8a)	
Process Categories	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)
<i>Product (article) characteristics</i>	
Physical form of product: Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
Duration: Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
Technical and organisational measures Clear transfer lines prior to de-coupling. Provide extract ventilation to points where emissions occur.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
Personal protection Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
Temperature: Covers use at ambient temperatures.	
1.2. CS2: Worker Contributing Scenario: Industrial (PROC2)	
Process Categories	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
<i>Product (article) characteristics</i>	
Physical form of product: Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	

<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Clear transfer lines prior to de-coupling.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>1.2. CS3: Worker Contributing Scenario: Industrial (PROC3)</b>	
<b>Process Categories</b>	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Clear transfer lines prior to de-coupling.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>1.2. CS4: Worker Contributing Scenario: Industrial (PROC8b)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Clear transfer lines prior to de-coupling.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>1.2. CS5: Worker Contributing Scenario: Industrial (PROC4)</b>	
<b>Process Categories</b>	Chemical production where opportunity for exposure arises (PROC4)

<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Clear transfer lines prior to de-coupling. Provide extract ventilation to points where emissions occur.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>1.2. CS6: Worker Contributing Scenario: Industrial (PROC13)</b>	
<b>Process Categories</b>	Treatment of articles by dipping and pouring (PROC13)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Provide extract ventilation to points where emissions occur.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>1.2. CS7: Worker Contributing Scenario: Industrial (PROC10)</b>	
<b>Process Categories</b>	Roller application or brushing (PROC10)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>1.2. CS8: Worker Contributing Scenario: Industrial (PROC7)</b>	

<b>Process Categories</b>	Industrial spraying (PROC7)
<b>Product (article) characteristics</b>	
<b>Physical form of product:</b> Liquid	
<b>Amount used, frequency and duration of use/exposure</b>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<b>Frequency:</b> Covers exposure up to 4 h/event	
<b>Technical and organisational conditions and measures</b>	
<b>Technical and organisational measures</b> Provide a good standard of controlled ventilation (5 to 10 air changes per hour).	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
<b>Personal protection</b> Wear suitable gloves tested to EN374. Wear a respirator conforming to EN140.	
<b>Other conditions affecting worker exposure</b>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>Ventilation rate:</b> 70 %	

## 1.3 Exposure estimation and reference to its source

### 1.3. CS1: Worker Contributing Scenario: Industrial (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	50 mg/m <sup>3</sup>	N/A	0.246
dermal, systemic, long-term	13.71 mg/m <sup>3</sup>	N/A	0.015
combined routes, systemic, long-term	N/A	N/A	0.261

### 1.3. CS2: Worker Contributing Scenario: Industrial (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	10 mg/m <sup>3</sup>	N/A	0.049
dermal, systemic, long-term	1.37 mg/m <sup>3</sup>	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.051

### 1.3. CS3: Worker Contributing Scenario: Industrial (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	25 mg/m <sup>3</sup>	N/A	0.123
dermal, systemic, long-term	0.34 mg/m <sup>3</sup>	N/A	0
combined routes, systemic, long-term	N/A	N/A	0.123

### 1.3. CS4: Worker Contributing Scenario: Industrial (PROC8b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	50 mg/m <sup>3</sup>	N/A	0.246
dermal, systemic, long-term	6.86 mg/m <sup>3</sup>	N/A	0.008
combined routes, systemic, long-term	N/A	N/A	0.254

### 1.3. CS5: Worker Contributing Scenario: Industrial (PROC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	100 mg/m <sup>3</sup>	N/A	0.492
dermal, systemic, long-term	6.86 mg/m <sup>3</sup>	N/A	0.008
combined routes, systemic, long-term	N/A	N/A	0.5

### 1.3. CS6: Worker Contributing Scenario: Industrial (PROC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	50 mg/m <sup>3</sup>	N/A	0.246
dermal, systemic, long-term	13.71 mg/m <sup>3</sup>	N/A	0.015
combined routes, systemic, long-term	N/A	N/A	0.261

### 1.3. CS7: Worker Contributing Scenario: Industrial (PROC10)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	50 mg/m <sup>3</sup>	N/A	0.246
dermal, systemic, long-term	27.43 mg/m <sup>3</sup>	N/A	0.031
combined routes, systemic, long-term	N/A	N/A	0.277

### 1.3. CS8: Worker Contributing Scenario: Industrial (PROC7)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	50 mg/m <sup>3</sup>	N/A	0.246
dermal, systemic, long-term	27.43 mg/m <sup>3</sup>	N/A	0.031

combined routes, systemic, long-term	N/A	N/A	0.277
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## 1.4 Guidance to DU to evaluate whether he works inside the boundaries set by the ES

### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



## 2. ES 2 Widespread use by professional workers

### 2.1 TITLE SECTION

Exposure Scenario name	Use in cleaning agents
Date - Version	24/07/2019 - 1.0
Life Cycle Stage	Widespread use by professional workers
Main user group	Professional uses
Sector(s) of use	Professional uses (SU22)

#### Worker Contributing Scenario

CS1 General use from professional operators	PROC8b
CS2 General use from professional operators	PROC2
CS3 General use from professional operators	PROC3
CS4 General use from professional operators	PROC4
CS5 General use from professional operators	PROC8a
CS6 General use from professional operators	PROC13
CS7 General use from professional operators	PROC10
CS8 General use from professional operators	PROC11
CS9 General use from professional operators	PROC11
CS10 General use from professional operators	PROC10
CS11 General use from professional operators	PROC10
CS12 General use from professional operators	PROC4

### 2.2 Conditions of use affecting exposure

#### 2.2. CS1: Worker Contributing Scenario: General use from professional operators (PROC8b)

Process Categories	Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)
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#### *Product (article) characteristics*

##### Physical form of product:

Liquid

#### *Amount used, frequency and duration of use/exposure*

##### Duration:

Covers daily exposures up to 8 hours

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

##### Personal protection

Wear suitable gloves tested to EN374.

#### *Other conditions affecting worker exposure*

**Temperature:** Covers use at ambient temperatures.

#### 2.2. CS2: Worker Contributing Scenario: General use from professional operators (PROC2)

Process Categories	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
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#### *Product (article) characteristics*

<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>2.2. CS3: Worker Contributing Scenario: General use from professional operators (PROC3)</b>	
<b>Process Categories</b>	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>2.2. CS4: Worker Contributing Scenario: General use from professional operators (PROC4)</b>	
<b>Process Categories</b>	Chemical production where opportunity for exposure arises (PROC4)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>2.2. CS5: Worker Contributing Scenario: General use from professional operators (PROC8a)</b>	
<b>Process Categories</b>	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	

<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>2.2. CS6: Worker Contributing Scenario: General use from professional operators (PROC13)</b>	
<b>Process Categories</b>	Treatment of articles by dipping and pouring (PROC13)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>2.2. CS7: Worker Contributing Scenario: General use from professional operators (PROC10)</b>	
<b>Process Categories</b>	Roller application or brushing (PROC10)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures.	
<b>2.2. CS8: Worker Contributing Scenario: General use from professional operators (PROC11)</b>	

Process Categories	Non industrial spraying (PROC11)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 5 %.	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures. <b>Ventilation rate:</b> 30 %	
<b>2.2. CS9: Worker Contributing Scenario: General use from professional operators (PROC11)</b>	
Process Categories	Non industrial spraying (PROC11)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 1 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	
<i>Technical and organisational conditions and measures</i>	
<b>Technical and organisational measures</b> Provide extract ventilation to material transfer points and other openings.	
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>	
<b>Personal protection</b> Wear suitable gloves tested to EN374.	
<i>Other conditions affecting worker exposure</i>	
<b>Temperature:</b> Covers use at ambient temperatures. <b>Ventilation rate:</b> Provide forced ventilation 70 %	
<b>2.2. CS10: Worker Contributing Scenario: General use from professional operators (PROC10)</b>	
Process Categories	Roller application or brushing (PROC10)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Duration:</b> Covers daily exposures up to 8 hours	

<i>Technical and organisational conditions and measures</i>			
<b>Technical and organisational measures</b> Provide extract ventilation to material transfer points and other openings.			
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>			
<b>Personal protection</b> Wear suitable gloves tested to EN374.			
<i>Other conditions affecting worker exposure</i>			
<b>Temperature:</b> Covers use at ambient temperatures.			
2.2. CS11: Worker Contributing Scenario: General use from professional operators (PROC10)			
Process Categories		Roller application or brushing (PROC10)	
<i>Product (article) characteristics</i>			
<b>Physical form of product:</b> Liquid			
<b>Concentration of substance in product:</b> Covers percentage substance in the product up to 25 %.			
<i>Amount used, frequency and duration of use/exposure</i>			
<b>Duration:</b> Covers daily exposures up to 8 hours			
<i>Technical and organisational conditions and measures</i>			
<b>Technical and organisational measures</b> Provide extract ventilation to points where emissions occur.			
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>			
<b>Personal protection</b> Wear suitable gloves tested to EN374.			
<i>Other conditions affecting worker exposure</i>			
<b>Temperature:</b> Covers use at ambient temperatures.			
2.2. CS12: Worker Contributing Scenario: General use from professional operators (PROC4)			
Process Categories		Chemical production where opportunity for exposure arises (PROC4)	
<i>Product (article) characteristics</i>			
<b>Physical form of product:</b> Liquid			
<i>Amount used, frequency and duration of use/exposure</i>			
<b>Duration:</b> Covers daily exposures up to 8 hours			
<i>Conditions and measures related to personal protection, hygiene and health evaluation</i>			
<b>Personal protection</b> Wear suitable gloves tested to EN374.			
<i>Other conditions affecting worker exposure</i>			
<b>Temperature:</b> Covers use at ambient temperatures.			
2.3 Exposure estimation and reference to its source			
2.3. CS1: Worker Contributing Scenario: General use from professional operators (PROC8b)			
Exposure route, Health effect, Exposure indicator		Exposure level	Calculation method
			Risk Characterization Ratio (RCR)

inhalative, systemic, long-term	50 mg/m <sup>3</sup>	N/A	0.246
dermal, systemic, long-term	13.71 mg/kg bw/day	N/A	0.015
combined routes, systemic, long-term	N/A	N/A	0.261

### 2.3. CS2: Worker Contributing Scenario: General use from professional operators (PROC2)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	20 mg/m <sup>3</sup>	N/A	0.098
dermal, systemic, long-term	1.37 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.1

### 2.3. CS3: Worker Contributing Scenario: General use from professional operators (PROC3)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	25 mg/m <sup>3</sup>	N/A	0.123
dermal, systemic, long-term	0.34 mg/kg bw/day	N/A	0
combined routes, systemic, long-term	N/A	N/A	0.123

### 2.3. CS4: Worker Contributing Scenario: General use from professional operators (PROC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	50 mg/m <sup>3</sup>	N/A	0.246
dermal, systemic, long-term	6.84 mg/kg bw/day	N/A	0.008
combined routes, systemic, long-term	N/A	N/A	0.254

### 2.3. CS5: Worker Contributing Scenario: General use from professional operators (PROC8a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	100 mg/m <sup>3</sup>	N/A	0.492
dermal, systemic, long-term	13.71 mg/kg bw/day	N/A	0.015
combined routes, systemic, long-term	N/A	N/A	0.507

### 2.3. CS6: Worker Contributing Scenario: General use from professional operators (PROC13)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
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inhalative, systemic, long-term	100 mg/m <sup>3</sup>	N/A	0.492
dermal, systemic, long-term	13.71 mg/kg bw/day	N/A	0.015
combined routes, systemic, long-term	N/A	N/A	0.507

### 2.3. CS7: Worker Contributing Scenario: General use from professional operators (PROC10)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	100 mg/m <sup>3</sup>	N/A	0.492
dermal, systemic, long-term	27.5 mg/kg bw/day	N/A	0.031
combined routes, systemic, long-term	N/A	N/A	0.523

### 2.3. CS8: Worker Contributing Scenario: General use from professional operators (PROC11)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	150 mg/m <sup>3</sup>	N/A	0.737
dermal, systemic, long-term	107.14 mg/kg bw/day	N/A	0.121
combined routes, systemic, long-term	N/A	N/A	0.858

### 2.3. CS9: Worker Contributing Scenario: General use from professional operators (PROC11)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	35 mg/m <sup>3</sup>	N/A	0.172
dermal, systemic, long-term	107.14 mg/kg bw/day	N/A	0.121
combined routes, systemic, long-term	N/A	N/A	0.293

### 2.3. CS10: Worker Contributing Scenario: General use from professional operators (PROC10)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	100 mg/m <sup>3</sup>	N/A	0.492
dermal, systemic, long-term	27.43 mg/kg bw/day	N/A	0.031
combined routes, systemic, long-term	N/A	N/A	0.523

### 2.3. CS11: Worker Contributing Scenario: General use from professional operators (PROC10)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
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inhalative, systemic, long-term	100 mg/m <sup>3</sup>	N/A	0.492
dermal, systemic, long-term	27.43 mg/kg bw/day	N/A	0.031
combined routes, systemic, long-term	N/A	N/A	0.523

### 2.3. CS12: Worker Contributing Scenario: General use from professional operators (PROC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	50 mg/m <sup>3</sup>	N/A	0.246
dermal, systemic, long-term	6.86 mg/kg bw/day	N/A	0.008
combined routes, systemic, long-term	N/A	N/A	0.254

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

### Guidance to check compliance with the exposure scenario:

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



### 3. ES 3 Consumer use; Various products (PC9b, PC9a, PC3, PC4, PC8)

#### 3.1 TITLE SECTION

Exposure Scenario name	Cleaning agent
Date - Version	24/07/2019 - 1.0
Life Cycle Stage	Consumer use
Main user group	Consumer uses
Sector(s) of use	Consumer uses (SU21)
Product Categories	Fillers, putties, plasters, modelling clay (PC9b) - Coatings and paints, thinners, paint removers (PC9a) - Air care products (PC3) - Anti-freeze and de-icing products (PC4) - Biocidal products (PC8) - Lubricants, greases, release products (PC24) - Washing and cleaning products (PC35) - Welding and soldering products, flux products (PC38)

#### Consumer Contributing Scenario

CS1 Consumer	PC3
CS2 Consumer	PC3
CS3 Consumer	PC4
CS4 Consumer	PC4
CS5 Consumer	PC4
CS6 Consumer	PC8
CS7 Consumer	PC8
CS8 Consumer	PC8
CS9 Consumer	PC9a
CS10 Consumer	PC9a
CS11 Consumer	PC9a
CS12 Consumer	PC9a
CS13 Consumer	PC9b
CS14 Consumer	PC9b
CS15 Consumer	PC9b
CS16 Consumer	PC9c
CS17 Consumer	PC24
CS18 Consumer	PC24
CS19 Consumer	PC24
CS20 Consumer	PC35
CS21 Consumer	PC35
CS22 Consumer	PC35
CS23 Consumer	PC35

#### 3.2 Conditions of use affecting exposure

### 3.2. CS1: Consumer Contributing Scenario: Consumer (PC3)

Product Categories	Air care products (PC3)
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#### *Product (article) characteristics*

**Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers concentrations up to 50 %

#### *Amount used, frequency and duration of use/exposure*

**Amounts used:**

Amount per use 0.5 g

**Frequency:**

Use frequency 365 days per year

**Frequency:**

1 events per day

#### *Other conditions affecting consumers exposure*

**Additional conditions human health**

Covers skin contact area up to 428 cm<sup>2</sup>

### 3.2. CS2: Consumer Contributing Scenario: Consumer (PC3)

Product Categories	Air care products (PC3)
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#### *Product (article) characteristics*

**Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers concentrations up to 50 %

#### *Amount used, frequency and duration of use/exposure*

**Amounts used:**

Amount per use 0.5 g

**Frequency:**

Use frequency 365 days per year

**Frequency:**

1 events per day

#### *Other conditions affecting consumers exposure*

**Additional conditions human health**

Covers skin contact area up to 37.5 cm<sup>2</sup>

### 3.2. CS3: Consumer Contributing Scenario: Consumer (PC4)

Product Categories	Anti-freeze and de-icing products (PC4)
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#### *Product (article) characteristics*

**Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers concentrations up to 50 %

#### *Amount used, frequency and duration of use/exposure*

**Amounts used:**

Amount per use 0.5 g

**Frequency:**

Use frequency 365 days per year

**Frequency:**

1 events per day

*Other conditions affecting consumers exposure***Room size:** Covers use in a one car garage (>34 m<sup>3</sup>) under typical ventilation.**3.2. CS4: Consumer Contributing Scenario: Consumer (PC4)****Product Categories**

Anti-freeze and de-icing products (PC4)

*Product (article) characteristics***Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers concentrations up to 50 %

*Amount used, frequency and duration of use/exposure***Frequency:**

Use frequency 365 days per year

**Frequency:**

1 events per day

*Other conditions affecting consumers exposure***Additional conditions human health**Covers skin contact area up to 420 cm<sup>2</sup>**3.2. CS5: Consumer Contributing Scenario: Consumer (PC4)****Product Categories**

Anti-freeze and de-icing products (PC4)

*Product (article) characteristics***Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers concentrations up to 50 %

*Amount used, frequency and duration of use/exposure***Frequency:**

Use frequency 365 days per year

**Frequency:**

1 events per day

*Other conditions affecting consumers exposure***Additional conditions human health**Covers skin contact area up to 214.4 cm<sup>2</sup>**3.2. CS6: Consumer Contributing Scenario: Consumer (PC8)****Product Categories**

Biocidal products (PC8)

*Product (article) characteristics***Physical form of product:**

Liquid

<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Frequency:</b> Use frequency 365 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 857.5 cm <sup>2</sup>	
<b>3.2. CS7: Consumer Contributing Scenario: Consumer (PC8)</b>	
<b>Product Categories</b>	Biocidal products (PC8)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Frequency:</b> Use frequency 365 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 857.5 cm <sup>2</sup>	
<b>3.2. CS8: Consumer Contributing Scenario: Consumer (PC8)</b>	
<b>Product Categories</b>	Biocidal products (PC8)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Frequency:</b> Use frequency 365 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 428 cm <sup>2</sup>	
<b>3.2. CS9: Consumer Contributing Scenario: Consumer (PC9a)</b>	
<b>Product Categories</b>	Coatings and paints, thinners, paint removers (PC9a)
<i>Product (article) characteristics</i>	

<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 27 g	
<b>Frequency:</b> Use frequency 4 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 428.75 cm <sup>2</sup>	
<b>3.2. CS10: Consumer Contributing Scenario: Consumer (PC9a)</b>	
<b>Product Categories</b>	Coatings and paints, thinners, paint removers (PC9a)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 74 g	
<b>Frequency:</b> Use frequency 6 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 428.75 cm <sup>2</sup>	
<b>3.2. CS11: Consumer Contributing Scenario: Consumer (PC9a)</b>	
<b>Product Categories</b>	Coatings and paints, thinners, paint removers (PC9a)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 215 g	
<b>Frequency:</b> Use frequency 2 days per year	

<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Room size:</b> Covers use in a one car garage (>34 m <sup>3</sup> ) under typical ventilation.	
<b>3.2. CS12: Consumer Contributing Scenario: Consumer (PC9a)</b>	
<b>Product Categories</b>	Coatings and paints, thinners, paint removers (PC9a)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 50 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 49 g	
<b>Frequency:</b> Use frequency 3 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 857.5 cm <sup>2</sup>	
<b>3.2. CS13: Consumer Contributing Scenario: Consumer (PC9b)</b>	
<b>Product Categories</b>	Fillers, putties, plasters, modelling clay (PC9b)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 20 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 85 g	
<b>Frequency:</b> Use frequency 12 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 37.5 cm <sup>2</sup>	
<b>3.2. CS14: Consumer Contributing Scenario: Consumer (PC9b)</b>	
<b>Product Categories</b>	Fillers, putties, plasters, modelling clay (PC9b)
<i>Product (article) characteristics</i>	

<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 2 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Amounts used:</b> Amount per use 13 g	
<b>Frequency:</b> Use frequency 12 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 37.5 cm <sup>2</sup>	
<b>3.2. CS15: Consumer Contributing Scenario: Consumer (PC9b)</b>	
<b>Product Categories</b>	Fillers, putties, plasters, modelling clay (PC9b)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 20 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Frequency:</b> Use frequency 365 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 254.5 cm <sup>2</sup>	
<b>3.2. CS16: Consumer Contributing Scenario: Consumer</b>	
<b>Product (Sub-)Categories</b>	Finger paints (PC9c)
<i>Product (article) characteristics</i>	
<b>Physical form of product:</b> Liquid	
<b>Concentration of substance in product:</b> Covers concentrations up to 20 %	
<i>Amount used, frequency and duration of use/exposure</i>	
<b>Frequency:</b> Use frequency 365 days per year	
<b>Frequency:</b> 1 events per day	
<i>Other conditions affecting consumers exposure</i>	
<b>Additional conditions human health</b> Covers skin contact area up to 254.5 cm <sup>2</sup>	

### 3.2. CS17: Consumer Contributing Scenario: Consumer (PC24)

Product Categories	Lubricants, greases, release products (PC24)
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#### *Product (article) characteristics*

**Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 %.

#### *Amount used, frequency and duration of use/exposure*

**Amounts used:**

Amount per use 2 g

**Frequency:**

Use frequency 4 days per year

**Frequency:**

1 events per day

#### *Other conditions affecting consumers exposure*

**Additional conditions human health**

Covers skin contact area up to 468 cm<sup>2</sup>

### 3.2. CS18: Consumer Contributing Scenario: Consumer (PC24)

Product Categories	Lubricants, greases, release products (PC24)
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#### *Product (article) characteristics*

**Physical form of product:**

Liquid

**Concentration of substance in product:**

Covers concentrations up to 20 %

#### *Amount used, frequency and duration of use/exposure*

**Amounts used:**

Amount per use 3 g

**Frequency:**

Use frequency 10 days per year

**Frequency:**

1 events per day

#### *Other conditions affecting consumers exposure*

**Additional conditions human health**

Covers skin contact area up to 468 cm<sup>2</sup>

### 3.2. CS19: Consumer Contributing Scenario: Consumer (PC24)

Product Categories	Lubricants, greases, release products (PC24)
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#### *Product (article) characteristics*

**Physical form of product:**

Liquid

#### *Amount used, frequency and duration of use/exposure*

**Amounts used:**

Amount per use 73 g



**Frequency:**

Use frequency 6 days per year

**Frequency:**

1 events per day

*Other conditions affecting consumers exposure***Additional conditions human health**

Covers skin contact area up to 428.75 cm<sup>2</sup>

**3.2. CS20: Consumer Contributing Scenario: Consumer (PC35)****Product Categories**

Washing and cleaning products (PC35)

*Product (article) characteristics***Physical form of product:**

Liquid

*Amount used, frequency and duration of use/exposure***Frequency:**

Use frequency 6 days per year

**Frequency:**

1 events per day

*Other conditions affecting consumers exposure***Additional conditions human health**

Covers skin contact area up to 857.5 cm<sup>2</sup>

**3.2. CS21: Consumer Contributing Scenario: Consumer (PC35)****Product Categories**

Washing and cleaning products (PC35)

*Product (article) characteristics***Physical form of product:**

Liquid

*Amount used, frequency and duration of use/exposure***Frequency:**

Use frequency 128 days per year

**Frequency:**

1 events per day

*Other conditions affecting consumers exposure***Additional conditions human health**

Covers skin contact area up to 857.5 cm<sup>2</sup>

**3.2. CS22: Consumer Contributing Scenario: Consumer (PC35)****Product Categories**

Washing and cleaning products (PC35)

*Product (article) characteristics***Physical form of product:**

Liquid

*Amount used, frequency and duration of use/exposure***Frequency:**

Use frequency 128 days per year

**Frequency:**

1 events per day

*Other conditions affecting consumers exposure*

**Additional conditions human health**Covers skin contact area up to 428 cm<sup>2</sup>**3.2. CS23: Consumer Contributing Scenario: Consumer (PC35)**

<b>Product Categories</b>	Washing and cleaning products (PC35)
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*Product (article) characteristics***Physical form of product:**

Liquid

*Amount used, frequency and duration of use/exposure***Amounts used:**

Amount per use 12 g

**Frequency:**

Use frequency 365 days per year

**Frequency:**

1 events per day

*Other conditions affecting consumers exposure***Room size:** Covers use in room size of 20 m<sup>3</sup>**3.3 Exposure estimation and reference to its source****3.2. CS1: Consumer Contributing Scenario: Consumer (PC3)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.1 mg/m <sup>3</sup>	N/A	0.001
dermal, systemic, long-term	142.67 mg/kg bw/day	N/A	0.447
combined routes, systemic, long-term	N/A	N/A	0.448

**3.2. CS2: Consumer Contributing Scenario: Consumer (PC3)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.83 mg/m <sup>3</sup>	N/A	0.009
dermal, systemic, long-term	N/A	N/A	0
combined routes, systemic, long-term	N/A	N/A	0.009

**3.2. CS3: Consumer Contributing Scenario: Consumer (PC4)**

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.01 mg/m <sup>3</sup>	N/A	0
dermal, systemic, long-term	N/A	N/A	0
combined routes, systemic, long-term	N/A	N/A	0

### 3.2. CS4: Consumer Contributing Scenario: Consumer (PC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	9.04 mg/m <sup>3</sup>	N/A	0.102
dermal, systemic, long-term	35.67 mg/kg bw/day	N/A	0.112
combined routes, systemic, long-term	N/A	N/A	0.214

### 3.2. CS5: Consumer Contributing Scenario: Consumer (PC4)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.51 mg/m <sup>3</sup>	N/A	0.006
dermal, systemic, long-term	17.87 mg/kg bw/day	N/A	0.056
combined routes, systemic, long-term	N/A	N/A	0.177

### 3.2. CS6: Consumer Contributing Scenario: Consumer (PC8)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	6.75 mg/m <sup>3</sup>	N/A	0.076
dermal, systemic, long-term	0.71 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.078

### 3.2. CS7: Consumer Contributing Scenario: Consumer (PC8)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	8.42 mg/m <sup>3</sup>	N/A	0.095
dermal, systemic, long-term	71.46 mg/kg bw/day	N/A	0.224
combined routes, systemic, long-term	N/A	N/A	0.319

### 3.2. CS8: Consumer Contributing Scenario: Consumer (PC8)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	5.78 mg/m <sup>3</sup>	N/A	0.065
dermal, systemic, long-term	35.87 mg/kg bw/day	N/A	0.112
combined routes, systemic, long-term	N/A	N/A	0.177

### 3.2. CS9: Consumer Contributing Scenario: Consumer (PC9a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	38.53 mg/m <sup>3</sup>	N/A	0.433
dermal, systemic, long-term	0.39 mg/kg bw/day	N/A	0.001
combined routes, systemic, long-term	N/A	N/A	0.434

### 3.2. CS10: Consumer Contributing Scenario: Consumer (PC9a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	15.15 mg/m <sup>3</sup>	N/A	0.17
dermal, systemic, long-term	0.57 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.172

### 3.2. CS11: Consumer Contributing Scenario: Consumer (PC9a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	34.29 mg/m <sup>3</sup>	N/A	0.385
dermal, systemic, long-term	0 mg/kg bw/day	N/A	0
combined routes, systemic, long-term	N/A	N/A	0.385

### 3.2. CS12: Consumer Contributing Scenario: Consumer (PC9a)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	4.9 mg/m <sup>3</sup>	N/A	0.055
dermal, systemic, long-term	0.59 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.057

### 3.2. CS13: Consumer Contributing Scenario: Consumer (PC9b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	53.63 mg/m <sup>3</sup>	N/A	0.603
dermal, systemic, long-term	1.19 mg/kg bw/day	N/A	0.004
combined routes, systemic, long-term	N/A	N/A	0.607

### 3.2. CS14: Consumer Contributing Scenario: Consumer (PC9b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	22.02 mg/m <sup>3</sup>	N/A	0.247
dermal, systemic, long-term	0.09 mg/kg bw/day	N/A	0
combined routes, systemic, long-term	N/A	N/A	0.247

### 3.2. CS15: Consumer Contributing Scenario: Consumer (PC9b)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
oral, systemic, long-term	20 mg/kg bw/day	N/A	0.769
dermal, systemic, long-term	2.54 mg/kg bw/day	N/A	0.008
combined routes, systemic, long-term	N/A	N/A	0.777

### 3.2. CS16: Consumer Contributing Scenario: Consumer

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
oral, systemic, long-term	20.25 mg/kg bw/day	N/A	0.779
dermal, systemic, long-term	38.16 mg/kg bw/day	N/A	0.12
combined routes, systemic, long-term	N/A	N/A	0.899

### 3.2. CS17: Consumer Contributing Scenario: Consumer (PC24)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	3.98 mg/m <sup>3</sup>	N/A	0.045
dermal, systemic, long-term	78 mg/kg bw/day	N/A	0.245
combined routes, systemic, long-term	N/A	N/A	0.29

### 3.2. CS18: Consumer Contributing Scenario: Consumer (PC24)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0 mg/m <sup>3</sup>	N/A	0
dermal, systemic, long-term	15.6 mg/kg bw/day	N/A	0.049
combined routes, systemic, long-term	N/A	N/A	0.049

### 3.2. CS19: Consumer Contributing Scenario: Consumer (PC24)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	12.06 mg/m <sup>3</sup>	N/A	0.136
dermal, systemic, long-term	35.73 mg/kg bw/day	N/A	0.112
combined routes, systemic, long-term	N/A	N/A	0.29

### 3.2. CS20: Consumer Contributing Scenario: Consumer (PC35)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	0.75 mg/m <sup>3</sup>	N/A	0.008
dermal, systemic, long-term	0.71 mg/kg bw/day	N/A	0.002
combined routes, systemic, long-term	N/A	N/A	0.01

### 3.2. CS21: Consumer Contributing Scenario: Consumer (PC35)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	8.42 mg/m <sup>3</sup>	N/A	0.095
dermal, systemic, long-term	71.46 mg/kg bw/day	N/A	0.224
combined routes, systemic, long-term	N/A	N/A	0.319

### 3.2. CS22: Consumer Contributing Scenario: Consumer (PC35)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	5.78 mg/m <sup>3</sup>	N/A	0.065
dermal, systemic, long-term	35.67 mg/kg bw/day	N/A	0.112
combined routes, systemic, long-term	N/A	N/A	0.177

### 3.2. CS23: Consumer Contributing Scenario: Consumer (PC35)

Exposure route, Health effect, Exposure indicator	Exposure level	Calculation method	Risk Characterization Ratio (RCR)
inhalative, systemic, long-term	9.4 mg/m <sup>3</sup>	N/A	0.106
dermal, systemic, long-term	0 mg/kg bw/day	N/A	0
combined routes, systemic, long-term	N/A	N/A	0.106

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

**Guidance to check compliance with the exposure scenario:**

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.