

# Annex to the extended Safety Data Sheet



Substance: Hydrocarbons, C5-C6, n-alkanes, isoalkanes, <5% n-hexane  
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## Section 1 Exposure scenario title

**Title:**

Manufacture of substance

**Sector of use:**

SU3, SU8, SU9

**Subsequent service life relevant for that use:**

Under nitrogen atmosphere no time limit

**Contributing Environmental Release Categories [ERC]:**

ERC1, ERC4  
SpERC: ESVOC 1.1.v1

**Contributing Process Categories [PROC]:**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15

**Scope of processes and activities covered by the Exposure Scenario:**

Manufacture of the substance or use as an intermediate or process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

**Physical form of product and vapour pressure:**

Liquid, vapour pressure 43 kPa at STP

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 % (unless stated differently)

**Frequency and duration of use/exposure:**

Covers daily exposures up to 8 hours (unless stated differently) [G2]

**Other operational conditions affecting exposure:**

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

#### Contributing scenarios and risk management measures of worker exposure

General exposures (closed systems) [CS15] PROC1	No specific measures identified [E18]
General exposures (closed systems) [CS15] PROC2	Handle substance within a closed system [E47]
General exposures (closed systems) [CS15] PROC3	Provide enhanced mechanical ventilation by mechanical means [E48]Handle substance within a closed system [E47]
General exposures (open systems) [CS16] PROC4	Provide enhanced mechanical ventilation by mechanical means [E48]

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Process sampling [CS2] PROC8b	Avoid carrying out operation for more than 1 hour [OC11 ]
Laboratory activities [CS36] PROC15	No specific measures identified [EI18]
Bulk transfers [CS14](open systems) [CS108] PROC8b	Provide extract ventilation to points where emissions occur [E54] Avoid carrying out operation for more than 4 hours [OC12]
Bulk transfers [CS14](closed systems) [CS107] PROC8b	Ensure material transfers are under containment or extract ventilation [E66] Avoid carrying out operation for more than 4 hours [OC12 ] Handle substance within a closed system [E47]
Equipment cleaning and maintenance [CS39] PROC8a	Provide enhanced mechanical ventilation by mechanical means [E48] Drain down and flush system prior to equipment break-in or maintenance [E55] Wear suitable gloves tested to EN374. [PPE15]
Material storage [CS67] PROC1	Store substance within a closed system [E84]
Material storage [CS67] PROC2	Store substance within a closed system [E84]

## Section 2.2 Control of environmental exposure

### Product characteristics:

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

### Amounts used

Maximum daily site tonnage (kg/day): 3000

### Frequency and duration of use

Emission days (days/year): 300

### Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

### Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.05

Release fraction to wastewater from process (initial release prior to RMM): 0.003

Release fraction to soil from process (initial release prior to RMM): 0.0001

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

Risk from environmental exposure is driven by freshwater sediment [TCR1b]. No wastewater treatment required [TCR6].

Treat air emission to provide a typical removal efficiency of (%): 90

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0

### Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

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

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0

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Maximum allowable site tonnage ( $M_{\text{Safe}}$ ) based on release following total wastewater treatment removal (kg/day): 470000

Assumed domestic sewage treatment plant flow ( $\text{m}^3/\text{day}$ ): 10000

### Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated [ETW4].

### Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated [ERW2].

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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## Section 1 Exposure scenario title

**Title:**

Distribution of Substance

**Sector of use:**

SU3; SU8; SU9

**Subsequent service life relevant for that use:**

Under nitrogen atmosphere no time limit

**Contributing Environmental Release Categories [ERC]:**

ERC1, ERC2, ERC3, ERC4; ERC5, ERC6, ERC7

SpERC: ESVOC 1.1b.v1

**Contributing Process Categories [PROC]:**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15

**Scope of processes and activities covered by the Exposure Scenario:**

Bulk loading (including marine vessel/barge, road/rail car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, maintenance and associated laboratory activities.

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

**Physical form of product and vapour pressure:**

Liquid, vapour pressure 43 kPa at STP

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 % (unless stated differently)

**Frequency and duration of use/exposure:**

Covers daily exposures up to 8 hours (unless stated differently) [G2]

**Other operational conditions affecting exposure:**

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

#### Contributing scenarios and risk management measures of worker exposure

General exposures (closed systems) [CS15] PROC1	Handle substance within a closed system [E47]
General exposures (closed systems) [CS15] PROC2	Handle substance within a closed system [E47]
General exposures (closed systems) [CS15] PROC3	Ensure material transfers are under containment or extract ventilation [E66] Handle substance within a closed system [E47]
General exposures (open systems) [CS16] PROC4	Ensure material transfers are under containment or extract ventilation [E66]
Process sampling [CS2] PROC3	Ensure material transfers are under containment or extract ventilation [E66]

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Laboratory activities [CS36] PROC15	No specific measures identified [E118]
Bulk transfers [CS14](closed systems) [CS107] PROC8b	Ensure material transfers are under containment or extract ventilation [E66] Ensure operation is undertaken outdoors [E69] Clear transfer lines prior to de-coupling [E39]
Bulk transfers [CS14](open systems) [CS108] PROC8b	Ensure material transfers are under containment or extract ventilation [E66] Ensure operation is undertaken outdoors [E69] Clear transfer lines prior to de-coupling [E39]
Bulk transfers [CS14](open systems) [CS108] PROC8b	Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Clear transfer lines prior to de-coupling [E39] Wear suitable gloves tested to EN374. [PPE15]
Drum and small package filling [CS6] PROC9	Fill containers/cans at dedicated fill points supplied with local extract ventilation [E51]
Equipment cleaning and maintenance [CS39] PROC8a	Apply vessel entry procedures including use of forced supplied air. [AP15] Drain down and flush system prior to equipment break-in or maintenance [E55] Wear suitable coveralls capable of preventing significant penetration of the substance [PPE27] Wear suitable gloves tested to EN374. [PPE15]
Material storage [CS67] PROC1	Store substance within a closed system [E84] Transfer via enclosed lines [E52]
Material storage [CS67] PROC2	Store substance within a closed system [E84] Transfer via enclosed lines [E52]

## Section 2.2 Control of environmental exposure

### Product characteristics:

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

### Amounts used

Maximum daily site tonnage (kg/day): 45000

### Frequency and duration of use

Emission days (days/year): 20

### Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

### Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.001

Release fraction to wastewater from process (initial release prior to RMM): 0.00001

Release fraction to soil from process (initial release prior to RMM): 0.00001

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

Risk from environmental exposure is driven by freshwater [TCR1a]. No wastewater treatment required [TCR6].

Treat air emission to provide a typical removal efficiency of (%): 90

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0

### Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1] Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

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## Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0  
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0  
Maximum allowable site tonnage ( $M_{\text{Safe}}$ ) based on release following total wastewater treatment removal (kg/day): 28000000  
Assumed domestic sewage treatment plant flow ( $\text{m}^3/\text{day}$ ): 2000

## Conditions and measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]

## Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1]

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

Risk management measures are based on qualitative risk characterization [G37]

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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## Section 1 Exposure scenario title

### Title:

Formulation & (re)packing of substances and mixtures

### Sector of use:

SU3, SU10

### Subsequent service life relevant for that use:

Under nitrogen atmosphere no time limit

### Contributing Environmental Release Categories [ERC]:

ERC2

SpERC: ESVOC 2.2.v1

### Contributing Process Categories [PROC]:

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC14, PROC15

### Scope of processes and activities covered by the Exposure Scenario:

Formulation, packing, and re-packing of the substance and its mixtures in batch or continuous operations, including storage, material transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

##### Physical form of product and vapour pressure:

Liquid, vapour pressure 43 kPa at STP

##### Concentration of substance in product:

Covers percentage substance in the product up to 100 % (unless stated differently)

##### Frequency and duration of use/exposure:

Covers daily exposures up to 8 hours (unless stated differently) [G2]

##### Other operational conditions affecting exposure:

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

### Contributing scenarios and risk management measures of worker exposure

General exposures (closed systems) [CS15] PROC1	Handle substance within a closed system [E47]
General exposures (closed systems) [CS15] PROC2	Handle substance within a closed system [E47]
General exposures (closed systems) [CS15] PROC3	Handle substance within a closed system [E47]
General exposures (open	Wear suitable gloves tested to EN374. [PPE15]

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systems) [CS16] PROC4	
Batch processes at elevated temperatures [CS136] Operation is carried out at elevated temperature (> then 20°C above ambient temperature) [OC7 ] PROC3	Provide enhanced mechanical ventilation by mechanical means [E48] Formulate in enclosed or ventilated mixing vessels [E46]
Process sampling [CS2] PROC3	Avoid dip sampling. [E42]
Laboratory activities [CS36] PROC15	No specific measures identified [E118]
Bulk transfers [CS14] PROC8b	Wear suitable gloves tested to EN374. [PPE15]
Mixing operations (open systems) [CS30] PROC5	Wear suitable gloves tested to EN374. [PPE15]
Manual [CS34] Transfer from/pouring from containers [CS22] PROC8a	Provide extract ventilation to points where emissions occur [E54] Use drum pumps or carefully pour from container [E64]
Drum/batch transfers [CS8] PROC8b	Provide extract ventilation to points where emissions occur [E54] Use drum pumps or carefully pour from container [E64]
Production or preparation or articles by tableting, compression, extrusion or pelletisation [CS100] PROC14	No specific measures identified [E118]
Drum and small package filling [CS6] PROC9	Wear suitable gloves tested to EN374. [PPE15]
Equipment cleaning and maintenance [CS39] PROC8a	Wear suitable gloves tested to EN374. [PPE15]
Material storage [CS67] PROC1	Store substance within a closed system [E84] Transfer via enclosed lines [E52]
Material storage [CS67] PROC2	Store substance within a closed system [E84] Transfer via enclosed lines [E52]

## Section 2.2 Control of environmental exposure

### Product characteristics:

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

### Amounts used

Maximum daily site tonnage (kg/day): 900

### Frequency and duration of use

Emission days (days/year): 100

### Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100



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## Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.025  
Release fraction to wastewater from process (initial release prior to RMM): 0.002  
Release fraction to soil from process (initial release prior to RMM): 0.0001

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

Risk from environmental exposure is driven by freshwater sediment [TCR1b]. No wastewater treatment required [TCR6].

Treat air emission to provide a typical removal efficiency of (%): 0

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0

## Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

## Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0

Maximum allowable site tonnage ( $M_{\text{Safe}}$ ) based on release following total wastewater treatment removal (kg/day): 150000

Assumed domestic sewage treatment plant flow ( $\text{m}^3/\text{day}$ ): 2000

## Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated [ETW4].

## Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated [ERW2].

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet

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## Section 1 Exposure scenario title

**Title:**

Use in coatings

**Sector of use:**

SU3

**Subsequent service life relevant for that use:**

Under nitrogen atmosphere no time limit

**Contributing Environmental Release Categories [ERC]:**

ERC4

SpERC: ESVOC 4.3a.v1

**Contributing Process Categories [PROC]:**

PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15

**Scope of processes and activities covered by the Exposure Scenario:**

Covers the use in coatings (paints, inks, adhesives, etc.) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidized bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

**Operational conditions of use**

Liquid, vapour pressure 43 kPa at STP

**Physical form of product and vapour pressure:**

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 % (unless stated differently)

**Frequency and duration of use/exposure:**

Covers daily exposures up to 8 hours (unless stated differently) [G2]

**Other operational conditions affecting exposure:**

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

### Contributing scenarios and risk management measures of worker exposure

General exposures (closed systems) [CS15] PROC1	Handle substance within a closed system [E47]
General exposures (closed systems) [CS15]with sample collection [CS56]Use in contained systems [CS38] PROC2	Handle substance within a closed system [E47]

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Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing [CS94] Operation is carried out at elevated temperature (> then 20°C above ambient temperature) [OC7 ] PROC2	Handle substance within a closed system [E47]
Mixing operations (closed systems) [CS29] General exposures (closed systems) [CS15] PROC3	Ensure material transfers are under containment or extract ventilation [E66] Handle substance within a closed system [E47]
Film formation - air drying [CS95] PROC4	Provide extract ventilation to points where emissions occur [E54]
Preparation of material for application [CS96] Mixing operations (open systems) [CS30] PROC5	Provide extract ventilation to points where emissions occur [E54]
Spraying (automatic/robotic) [CS97] PROC7	Carry out in a vented booth provided with laminar airflow [E59]
Manual [CS34] Spraying [CS10] PROC7	Provide enhanced mechanical ventilation by mechanical means [E48] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Material transfers [CS3] PROC8a	Provide extract ventilation to points where emissions occur [E54] Clear transfer lines prior to de-coupling [E39]
Material transfers [CS3] PROC8a	Provide extract ventilation to points where emissions occur [E54] Clear transfer lines prior to de-coupling [E39]
Roller, spreader, flow application [CS98] PROC10	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60]
Dipping, immersion and pouring [CS4] PROC13	Provide extract ventilation to points where emissions occur [E54] Avoid manual contact with wet work pieces [E17]
Laboratory activities [CS36] PROC15	No specific measures identified [E18]
Material transfers [CS3] Drum/batch transfers [CS8] Transfer from/pouring from containers [CS22] PROC9	Ensure transfer points are supplied with extract ventilation. [E73]
Production or preparation or articles by tableting, compression, extrusion or pelletisation [CS100] PROC14	Provide extract ventilation to points where emissions occur [E54]

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## Section 2.2 Control of environmental exposure

### Product characteristics:

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

### Amounts used

Maximum daily site tonnage (kg/day): 4500

### Frequency and duration of use

Emission days (days/year): 20

### Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

### Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.988

Release fraction to wastewater from process (initial release prior to RMM): 0.007

Release fraction to soil from process (initial release prior to RMM): 0

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

Risk from environmental exposure is driven by Freshwater Sediment [TCR1b].

If discharging to domestic sewage treatment plant, no onsite wastewater treatment required [TCR10].

Treat air emission to provide a typical removal efficiency of (%): 90

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 64.7

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0

### Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

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

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0

Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0

Maximum allowable site tonnage ( $M_{Safe}$ ) based on release following total wastewater treatment removal (kg/day): 40000

Assumed domestic sewage treatment plant flow ( $m^3/day$ ): 2000

### Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated [ETW4].

### Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated [ERW2].

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

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## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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## Section 1 Exposure scenario title

### Title:

Use in coatings

### Sector of use:

SU22

### Subsequent service life relevant for that use:

Under nitrogen atmosphere no time limit

### Contributing Environmental Release Categories [ERC]:

ERC8a, ERC8d

SpERC: ESVOC 8.3b.v1

### Contributing Process Categories [PROC]:

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19

### Scope of processes and activities covered by the Exposure Scenario:

Covers the use in coatings (paints, inks, adhesives, etc.) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods and film formation) and equipment cleaning, maintenance and associated laboratory activities.

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

Liquid, vapour pressure 43 kPa at STP

#### Physical form of product and vapour pressure:

#### Concentration of substance in product:

Covers percentage substance in the product up to 100 % (unless stated differently)

#### Frequency and duration of use/exposure:

Covers daily exposures up to 8 hours (unless stated differently) [G2]

#### Other operational conditions affecting exposure:

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

### Contributing scenarios and risk management measures of worker exposure

General exposures (closed systems) [CS15] PROC1	Handle substance within a closed system [E47]
Filling / preparation of equipment from drums or containers. [CS45] PROC2	Handle substance within a closed system [E47]
General exposures (closed systems) [CS15] Use in contained systems [CS38] PROC2	Handle substance within a closed system [E47]
Preparation of material for application [CS96] PROC3	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings [E60]

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Film formation - air drying [CS95]Outdoor [OC9] PROC4	Ensure operation is undertaken outdoors [E69] Avoid carrying out operation for more than 1 hour [OC11] Wear suitable gloves tested to EN374. [PPE15]
Film formation - air drying [CS95]Outdoor [OC9] PROC4	Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]Wear suitable gloves tested to EN374. [PPE15]
Film formation - air drying [CS95]Indoor [OC8] PROC4	Provide extract ventilation to points where emissions occur [E54]
Preparation of material for application [CS96]Indoor [OC8] PROC5	Provide enhanced mechanical ventilation by mechanical means [E48] Avoid carrying out operation for more than 1 hour [OC11] Wear suitable gloves tested to EN374. [PPE15]
Preparation of material for application [CS96]Indoor [OC8] PROC5	Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour) [E40] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear suitable gloves tested to EN374. [PPE15]
Preparation of material for application [CS96]Outdoor [OC9] PROC5	Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear suitable gloves tested to EN374. [PPE15]
Material transfers [CS3]Drum/batch transfers [CS8] PROC8a	Provide enhanced mechanical ventilation by mechanical means [E48] Avoid carrying out operation for more than 1 hour [OC11] Wear suitable gloves tested to EN374. [PPE15]
Material transfers [CS3]Drum/batch transfers [CS8] PROC8a	Provide enhanced mechanical ventilation by mechanical means [E48] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear suitable gloves tested to EN374. [PPE15]
Material transfers [CS3]Drum/batch transfers [CS8] PROC8b	Ensure transfer points are supplied with extract ventilation. [E73]
Roller, spreader, flow application [CS98]Indoor [OC8] PROC10	Provide enhanced mechanical ventilation by mechanical means [E48] Avoid carrying out operation for more than 1 hour [OC11] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Roller, spreader, flow application [CS98]Indoor [OC8] PROC10	Provide enhanced mechanical ventilation by mechanical means [E48] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Roller, spreader, flow application [CS98]Outdoor [OC9] PROC10	Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Manual [CS34]Spraying [CS10]Indoor [OC8] PROC11	Carry out in a vented booth [E57] Limit the substance content in the product to 25 % [OC18] Avoid carrying out operation for more than 4 hours [OC12]
Manual [CS34]Spraying [CS10]Indoor [OC8] PROC11	Carry out in a vented booth [E57] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Manual [CS34]Spraying [CS10]Outdoor [OC9] PROC11	Ensure operation is undertaken outdoors [E69] Limit the substance content in the product to 5 % [OC17] Avoid carrying out operation for more than 1 hour [OC11] Wear suitable gloves tested to EN374. [PPE15]
Manual [CS34]Spraying [CS10]Outdoor [OC9] PROC11	"Ensure operation is undertaken outdoors [E69] Avoid carrying out operation for more than 4 hours [OC12 ] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in

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	combination with specific activity training. [PPE17]
Dipping, immersion and pouring [CS4]Indoor [OC8] PROC13	Provide extract ventilation to points where emissions occur [E54] Avoid manual contact with wet work pieces [E17]
Dipping, immersion and pouring [CS4]Indoor [OC8] PROC13	Provide extract ventilation to points where emissions occur [E54] Avoid manual contact with wet work pieces [E17]
Dipping, immersion and pouring [CS4]Outdoor [OC9] PROC13	Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Avoid manual contact with wet work pieces [E17] Wear suitable gloves tested to EN374. [PPE15]
Laboratory activities [CS36] PROC15	No specific measures identified [E18]
Hand application - fingerpaints, pastels, adhesives [CS72]Indoor [OC8] PROC19	"Ensure doors and windows are opened [E72] Limit the substance content in the product to 25 % [OC18 ] Avoid carrying out operation for more than 1 hour [OC11 ] Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. [PPE18]
Hand application - fingerpaints, pastels, adhesives [CS72]Indoor [OC8] PROC19	"Ensure doors and windows are opened [E72] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. [PPE18]
Hand application - fingerpaints, pastels, adhesives [CS72]Outdoor [OC9] PROC19	"Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. [PPE18]

## Section 2.2 Control of environmental exposure

### Product characteristics:

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

### Amounts used

Maximum daily site tonnage (kg/day): 250

### Frequency and duration of use

Emission days (days/year): 365

### Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

### Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.98

Release fraction to wastewater from process (initial release prior to RMM): 0.01

Release fraction to soil from process (initial release prior to RMM): 0.01

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

Risk from environmental exposure is driven by Freshwater [TCR1a]. No wastewater treatment required [TCR6].

Treat air emission to provide a typical removal efficiency of (%): 0

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0



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## Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

## Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0  
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0  
Maximum allowable site tonnage ( $M_{\text{Safe}}$ ) based on release following total wastewater treatment removal (kg/day): 28000  
Assumed domestic sewage treatment plant flow ( $\text{m}^3/\text{day}$ ): 2000

## Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated [ETW4].

## Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated [ERW2].

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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## Section 1 Exposure scenario title

**Title:**

Use in coatings

**Sector of use:**

SU21

**Subsequent service life relevant for that use:**

Under nitrogen atmosphere no time limit

**Contributing Environmental Release Categories [ERC]:**

ERC8a, ERC8d  
SpERC: ESVOC 8.3c.v1

**Contributing Product Category [PC]:**

PC1, PC4, PC8, PC9, PC15, PC18, PC23, PC24, PC32, PC34

**Scope of processes and activities covered by the Exposure Scenario:**

Covers the use in coatings (paints, inks, adhesives, etc.) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

**Physical form of product and vapour pressure:**

Liquid, vapour pressure 43 kPa at STP

**Concentration of substance in product:**

Unless otherwise stated, cover concentrations up to 100% [ConsOC1]

**Amounts used:**

Unless otherwise stated, covers use amounts up to 13800g [ConsOC2]; covers skin contact area up to 857.5cm<sup>2</sup> [ConsOC5]

**Frequency and duration of use/exposure:**

Unless otherwise stated, covers use frequency up to 1 times per day [ConsOC4]; covers exposure up to 6 hours per event [ConsOC14]

**Other operational conditions affecting exposure:**

Unless otherwise stated assumes use at ambient temperatures [ConsOC15]; assumes use in a 20 m<sup>3</sup> room [ConsOC11]; assumes use with typical ventilation [ConsOC8].

#### Contributing scenarios and risk management measures of worker exposure

PC1:Adhesives, sealants-- Glues, hobby use	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35,73 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 9g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 4,00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1];

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Glues DIY-use (carpet glue, tile glue, wood parquet glue)		covers use up to 1 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 110,00 cm2 [ConsOC5]; for each use event, covers use amounts up to 6390g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 6,00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--Glue from spray	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35,73 cm2 [ConsOC5]; for each use event, covers use amounts up to 85,05g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 4,00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC1:Adhesives, sealants--Sealants	OC	Unless otherwise stated, covers concentrations up to 30% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35,73 cm2 [ConsOC5]; for each use event, covers use amounts up to 75g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1,00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Washing car window	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 0,5g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0,02hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Pouring into radiator	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428,00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2000g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0,17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC4_n:Anti-freeze and de-icing products--Lock de-icer	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 214,40 cm2 [ConsOC5]; for each use event, covers use amounts up to 4g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0,25hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Laundry and dish washing products	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857,50 cm2 [ConsOC5]; for each use event, covers use amounts up to 15g

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		[ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 0,50hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners )	OC	Unless otherwise stated, covers concentrations up to 5% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857,50 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 27g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 0,33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC8_n: Biocidal products (excipient use only for solvent products)--Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	OC	Unless otherwise stated, covers concentrations up to 15% [ConsOC1]; covers use up to 128 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428,00 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 35g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 0,17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Waterborne latex wall paint	OC	Unless otherwise stated, covers concentrations up to 1,5% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428,75 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 2,20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Solvent rich, high solid, water borne paint	OC	Unless otherwise stated, covers concentrations up to 27,5% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428,75 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 2,20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Aerosol spray can	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 2 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 215g [ConsOC2]; Covers use in a one car garage (34m <sup>3</sup> ) under typical ventilation [ConsOC10]; covers use in room size of 34m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 0,33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9a:Coatings and paints, fillers putties, thinners--Removers (paint-, glue-, wall paper-, sealant-remover)	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 3 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857,50 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 2,00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

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PC9b: Fillers, putties, plasters, modeling clay--Fillers and putty	OC	Unless otherwise stated, covers concentrations up to 2% [ConsOC1]; covers use up to 12 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 35,73 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 85g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 4,00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b: Fillers, putties, plasters, modeling clay--Plasters and floor equalizers	OC	Unless otherwise stated, covers concentrations up to 2% [ConsOC1]; covers use up to 12 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857,50 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 13800g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 2,00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC9b: Fillers, putties, plasters, modeling clay--Modelling clay	OC	Unless otherwise stated, covers concentrations up to 1% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 254,40 cm <sup>2</sup> [ConsOC5]; for each use event, assumes swallowed amount of 1g [ConsOC13];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Waterborne latex wall paint	OC	Unless otherwise stated, covers concentrations up to 1,5% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428,75 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 2760g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 2,20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Solvent rich, high solid, water borne paint	OC	Unless otherwise stated, covers concentrations up to 27,5% [ConsOC1]; covers use up to 6 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 428,75 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 744g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 2,20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Aerosol spray can	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 2 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; for each use event, covers use amounts up to 215g [ConsOC2]; Covers use in a one car garage (34m <sup>3</sup> ) under typical ventilation [ConsOC10]; covers use in room size of 34m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 0,33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC15_n: Non-metal surface treatment products--Removers (paint-, glue-, wall paper-, sealant-remover)	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 3 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857,50 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 491g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 2,00hr/event[ConsOC14];

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	RMM	No specific RMMs identified beyond those OCs stated
PC18_n: Ink and toners--Inks and toners.	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 71,40 cm2 [ConsOC5]; for each use event, covers use amounts up to 40g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 2,20hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC23_n: Leather tanning, dye, finishing, impregnation and care products--Polishes, wax / cream (floor, furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 29 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430,00 cm2 [ConsOC5]; for each use event, covers use amounts up to 56g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1,23hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC23_n: Leather tanning, dye, finishing, impregnation and care products--Polishes, spray (furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 8 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430,00 cm2 [ConsOC5]; for each use event, covers use amounts up to 56g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 0,33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Liquids	OC	Unless otherwise stated, covers concentrations up to 100% [ConsOC1]; covers use up to 4 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468,00 cm2 [ConsOC5]; for each use event, covers use amounts up to 2200g [ConsOC2]; Covers use in a one car garage (34m3) under typical ventilation [ConsOC10]; covers use in room size of 34m3[ConsOC11]; for each use event, covers exposure up to 0,17hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC24: Lubricants, greases, and release products--Pastes	OC	Unless otherwise stated, covers concentrations up to 20% [ConsOC1]; covers use up to 10 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 468,00 cm2 [ConsOC5]; for each use event, covers use amounts up to 34g [ConsOC2]; covers use in room size of m3[ConsOC11];
	RMM	No specific RMMs identified beyond those OCs stated
PC31:Polishes and wax blends--Polishes, wax / cream (floor, furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 29 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430,00 cm2 [ConsOC5]; for each use event, covers use amounts up to 142g [ConsOC2]; covers use in room size of 20m3[ConsOC11]; for each use event, covers exposure up to 1,23hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC31:Polishes and wax blends--Polishes, spray (furniture, shoes)	OC	Unless otherwise stated, covers concentrations up to 50% [ConsOC1]; covers use up to 8 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 430,00 cm2 [ConsOC5]; for each use event, covers use amounts up to 35g



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		[ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 0,33hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated
PC34_n: Textile dyes, finishing and impregnating products--	OC	Unless otherwise stated, covers concentrations up to 10% [ConsOC1]; covers use up to 365 days/year[ConsOC3]; covers use up to 1 time/on day of use[ConsOC4]; covers skin contact area up to 857,50 cm <sup>2</sup> [ConsOC5]; for each use event, covers use amounts up to 115g [ConsOC2]; covers use in room size of 20m <sup>3</sup> [ConsOC11]; for each use event, covers exposure up to 1,00hr/event[ConsOC14];
	RMM	No specific RMMs identified beyond those OCs stated

## Section 2.2 Control of environmental exposure

### Product characteristics:

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

### Amounts used

Maximum daily site tonnage (kg/day): 250

### Frequency and duration of use

Emission days (days/year): 365

### Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

### Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.99

Release fraction to wastewater from process (initial release prior to RMM): 0.01

Release fraction to soil from process (initial release prior to RMM): 0.005

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

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0

Maximum allowable site tonnage ( $M_{Safe}$ ) based on release following total wastewater treatment removal (kg/day): 28000

Assumed domestic sewage treatment plant flow (m<sup>3</sup>/day): 2000

### Conditions and measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable local and/or national regulations [ETW3]

### Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations [ERW1]

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrisk model [EE2].

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## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Not applicable for wide dispersive uses [DSU5].



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## Section 1 Exposure scenario title

**Title:**

Use in Cleaning Agents

**Sector of use:**

SU3

**Subsequent service life relevant for that use:**

Under nitrogen atmosphere no time limit

**Contributing Environmental Release Categories [ERC]:**

ERC4

SpERC: ESVOC 4.4a.v1

**Contributing Process Categories [PROC]:**

PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13

**Scope of processes and activities covered by the Exposure Scenario:**

Covers the use as a component of cleaning products including transfers from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

**Physical form of product and vapour pressure:**

Liquid, vapour pressure 43 kPa at STP

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 % (unless stated differently)

**Frequency and duration of use/exposure:**

Covers daily exposures up to 8 hours (unless stated differently) [G2]

**Other operational conditions affecting exposure:**

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

#### Contributing scenarios and risk management measures of worker exposure

Bulk transfers [CS14] PROC8a	Ensure material transfers are under containment or extract ventilation [E66]
Automated process with (semi) closed systems. [CS93]Use in contained systems [CS38] PROC2	No specific measures identified [E18]
Automated process with (semi) closed systems. [CS93]Drum/batch transfers [CS8] PROC3	Avoid carrying out operation for more than 1 hour [OC11 ]
Automated process with (semi) closed systems. [CS93]Drum/batch transfers	Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]

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[CS8] PROC3	
Application of cleaning products in closed systems [CS101] PROC2	No specific measures identified [E118]
Filling / preparation of equipment from drums or containers. [CS45] PROC8b	Ensure material transfers are under containment or extract ventilation [E66]
Use in contained batch processes [CS37] PROC4	Provide extract ventilation to points where emissions occur [E54]
Degreasing small objects in cleaning station [CS41] PROC13	Provide extract ventilation to points where emissions occur [E54]
Cleaning with low-pressure washers [CS42] PROC10	Provide enhanced mechanical ventilation by mechanical means [E48] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Cleaning with high pressure washers [CS44] PROC7	Provide enhanced mechanical ventilation by mechanical means [E48] Avoid carrying out operation for more than 1 hour [OC11] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Cleaning with high pressure washers [CS44] PROC7	Provide enhanced mechanical ventilation by mechanical means [E48] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Manual [CS34]Surfaces [CS48]Cleaning [CS47] PROC10	Provide enhanced mechanical ventilation by mechanical means [E48] Avoid carrying out operation for more than 4 hours [OC12] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Manual [CS34]Surfaces [CS48]Cleaning [CS47] PROC10	Provide enhanced mechanical ventilation by mechanical means [E48] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
General exposures (closed systems) [CS15] PROC1	No specific measures identified [E118]

## Section 2.2 Control of environmental exposure

### Product characteristics:

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

### Amounts used

Maximum daily site tonnage (kg/day): 4500

### Frequency and duration of use

Emission days (days/year): 20

### Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

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## Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 1.0  
Release fraction to wastewater from process (initial release prior to RMM): 0.00003  
Release fraction to soil from process (initial release prior to RMM): 0

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

Risk from environmental exposure is driven by Agricultural Soil [TCR1f].  
No wastewater treatment required [TCR6].  
Treat air emission to provide a typical removal efficiency of (%): 70  
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 0  
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0

## Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

## Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0  
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0  
Maximum allowable site tonnage ( $M_{\text{Safe}}$ ) based on release following total wastewater treatment removal (kg/day): 5000000  
Assumed domestic sewage treatment plant flow ( $\text{m}^3/\text{day}$ ): 2000

## Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated [ETW4].

## Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated [ERW2].

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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## Section 1 Exposure scenario title

### Title:

Use in cleaning agents

### Sector of use:

SU22

### Subsequent service life relevant for that use:

Under nitrogen atmosphere no time limit

### Contributing Environmental Release Categories [ERC]:

ERC8a, ERC8d  
SpERC ESVOC 8.4b.v1

### Contributing Process Categories [PROC]:

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC19

### Scope of processes and activities covered by the Exposure Scenario:

Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand)

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

##### Physical form of product and vapour pressure:

Liquid, vapour pressure 43 kPa at STP

##### Concentration of substance in product:

Covers percentage substance in the product up to 100 % (unless stated differently)

##### Frequency and duration of use/exposure:

Covers daily exposures up to 8 hours (unless stated differently) [G2]

##### Other operational conditions affecting exposure:

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

#### Contributing scenarios and risk management measures of worker exposure

Filling / preparation of equipment from drums or containers. [CS45] PROC8b	Provide enhanced mechanical ventilation by mechanical means [E48] Avoid carrying out operation for more than 4 hours [OC12] Wear suitable gloves tested to EN374. [PPE15]
Filling / preparation of equipment from drums or containers. [CS45] PROC8b	Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear suitable gloves tested to EN374. [PPE15]
Automated process with (semi) closed systems. [CS93] Use in contained systems [CS38] PROC2	No specific measures identified [E18]
Automated process with (semi) closed systems.	Avoid carrying out operation for more than 4 hours [OC12 ]

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[CS93]Drum/batch transfers [CS8]Use in contained systems [CS38] PROC3	
Automated process with (semi) closed systems. [CS93]Drum/batch transfers [CS8]Use in contained systems [CS38] PROC3	Wear a respirator conforming to EN140 with Type A filter or better. [PPE22]
Semi Automated process. (e.g.: Semi automatic application of floor care and maintenance products) [CS76] PROC4	Provide enhanced mechanical ventilation by mechanical means [E48] Wear suitable gloves tested to EN374. [PPE15]
Filling / preparation of equipment from drums or containers. [CS45] PROC8a	Ensure operation is undertaken outdoors [E69] Avoid carrying out operation for more than 1 hour [OC11 ] Wear suitable gloves tested to EN374. [PPE15]
Filling / preparation of equipment from drums or containers. [CS45] PROC8a	Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear suitable gloves tested to EN374. [PPE15]
Manual [CS34]Surfaces [CS48]Cleaning [CS47]Dipping, immersion and pouring [CS4] PROC13	Provide enhanced mechanical ventilation by mechanical means [E48] Wear suitable gloves tested to EN374. [PPE15]
Cleaning with low-pressure washers [CS42]Rolling, Brushing [CS51]no spraying [CS60] PROC10	Provide enhanced mechanical ventilation by mechanical means [E48] Limit the substance content in the product to 25 % [OC18] Wear suitable gloves tested to EN374. [PPE15]
Cleaning with high pressure washers [CS44]Spraying [CS10]Indoor [OC8] PROC11	Provide enhanced mechanical ventilation by mechanical means [E48] Limit the substance content in the product to 5 % [OC17] Wear suitable gloves tested to EN374. [PPE15]
Cleaning with high pressure washers [CS44]Spraying [CS10]Outdoor [OC9] PROC11	Ensure operation is undertaken outdoors [E69] Limit the substance content in the product to 1 % [OC16] Wear suitable gloves tested to EN374. [PPE15]
Manual [CS34]Surfaces [CS48]Cleaning [CS47]Spraying [CS10] PROC10	Ensure doors and windows are opened [E72] Limit the substance content in the product to 25 % [OC18] Wear suitable gloves tested to EN374. [PPE15]
Manual [CS34]Surfaces [CS48]Cleaning [CS47] PROC10	Ensure doors and windows are opened [E72] Limit the substance content in the product to 25 % [OC18 ] Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. [PPE16]
Ad hoc manual application via trigger sprays, dipping, etc. [CS27]Rolling, Brushing [CS51] PROC10	Limit the substance content in the product to 25 % [OC18] Avoid carrying out operation for more than 1 hour [OC11] Wear suitable gloves tested to EN374. [PPE15]
Application of cleaning products in closed systems	Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear suitable gloves tested to EN374.

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[CS101]Outdoor [OC9] PROC4	[PPE15]
Cleaning of medical devices [CS74] PROC4	Provide extract ventilation to points where emissions occur [E54]
General exposures (closed systems) [CS15] PROC1	Handle substance within a closed system [E47]
Hand application - fingerpaints, pastels, adhesives [CS72]Indoor [OC8] PROC19	Ensure doors and windows are opened [E72] Limit the substance content in the product to 25 % [OC18 ] Avoid carrying out operation for more than 1 hour [OC11 ] Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. [PPE18]
Hand application - fingerpaints, pastels, adhesives [CS72]Indoor [OC8] PROC19	Ensure doors and windows are opened [E72] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. [PPE18]
Hand application - fingerpaints, pastels, adhesives [CS72]Outdoor [OC9] PROC19	Ensure operation is undertaken outdoors [E69] Wear a respirator conforming to EN140 with Type A filter or better. [PPE22] Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. [PPE18]

## Section 2.2 Control of environmental exposure

### Product characteristics:

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

### Amounts used

Maximum daily site tonnage (kg/day): 250

### Frequency and duration of use

Emission days (days/year): 365

### Environmental factors not influenced by risk management

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

### Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.02

Release fraction to wastewater from process (initial release prior to RMM): 0.000001

Release fraction to soil from process (initial release prior to RMM): 0

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

Risk from environmental exposure is driven by Freshwater [TCR1a].

No wastewater treatment required [TCR6]. Treat air emission to provide a typical removal efficiency of (%): 0

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0

### Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

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## Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0  
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0  
Maximum allowable site tonnage ( $M_{\text{Safe}}$ ) based on release following total wastewater treatment removal (kg/day): 510000  
Assumed domestic sewage treatment plant flow ( $\text{m}^3/\text{day}$ ): 2000

## Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated [ETW4].

## Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated [ERW2].

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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## Section 1 Exposure scenario title

**Title:**

Use in laboratories

**Sector of use:**

SU3

**Subsequent service life relevant for that use:**

Under nitrogen atmosphere no time limit

**Contributing Environmental Release Categories [ERC]:**

ERC2, ECRC4  
SpERC: not applicable

**Contributing Process Categories [PROC]:**

PROC15

**Scope of processes and activities covered by the Exposure Scenario:**

Use of the substance within laboratory settings, including material transfers and equipment cleaning

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

**Physical form of product and vapour pressure:**

Liquid, vapour pressure 43 kPa at STP

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 % (unless stated differently)

**Frequency and duration of use/exposure:**

Covers daily exposures up to 8 hours (unless stated differently) [G2]

**Other operational conditions affecting exposure:**

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

#### Contributing scenarios and risk management measures of worker exposure

**Laboratory activities [CS36] PROC15:**

No specific measures identified [E118]

### Section 2.2 Control of environmental exposure

**Product characteristics:**

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

**Amounts used**

Maximum daily site tonnage (kg/day): 4500

**Frequency and duration of use**

Emission days (days/year): 20

**Environmental factors not influenced by risk management**

Local freshwater dilution factor: 10  
Local marine water dilution factor: 100



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## Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.025  
Release fraction to wastewater from process (initial release prior to RMM): 0.02  
Release fraction to soil from process (initial release prior to RMM): 0.001

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

Risk from environmental exposure is driven by Freshwater Sediment [TCR1b].  
No wastewater treatment required [TCR6].  
Treat air emission to provide a typical removal efficiency of (%): 0  
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 87.7  
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0

## Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

## Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0  
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0  
Maximum allowable site tonnage ( $M_{\text{Safe}}$ ) based on release following total wastewater treatment removal (kg/day): 24000  
Assumed domestic sewage treatment plant flow ( $\text{m}^3/\text{day}$ ): 2000

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

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## Section 1 Exposure scenario title

**Title:**

Use in Laboratories

**Sector of use:**

SU22

**Subsequent service life relevant for that use:**

Under nitrogen atmosphere no time limit

**Contributing Environmental Release Categories [ERC]:**

ERC8a

SpERC: ESVOC 8.17.v1

**Contributing Process Categories [PROC]:**

PROC15

**Scope of processes and activities covered by the Exposure Scenario:**

Use of small quantities within laboratory settings, including material transfers and equipment cleaning.

## Section 2 Operational conditions and risk management measures

### Section 2.1 Control of worker exposure

#### Operational conditions of use

**Physical form of product and vapour pressure:**

Liquid, vapour pressure 43 kPa at STP

**Concentration of substance in product:**

Covers percentage substance in the product up to 100 % (unless stated differently)

**Frequency and duration of use/exposure:**

Covers daily exposures up to 8 hours (unless stated differently) [G2]

**Other operational conditions affecting exposure:**

Assumes use at not more than 20 °C above ambient temperature, unless stated differently [G15]. Assumes a good basic standard of occupational hygiene has been implemented [G1]

#### Contributing scenarios and risk management measures of worker exposure

**Laboratory activities [CS36] PROC15:**

No specific measures identified [E118]

### Section 2.2 Control of environmental exposure

**Product characteristics:**

Substance is complex UVCB [PrC3]. Predominantly hydrophobic [PrC4a].

**Amounts used**

Maximum daily site tonnage (kg/day): 250

**Frequency and duration of use**

Emission days (days/year): 365

**Environmental factors not influenced by risk management**

Local freshwater dilution factor: 10

Local marine water dilution factor: 100

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## Other given operational conditions affecting environmental exposure

Release fraction to air from process (initial release prior to RMM): 0.5  
Release fraction to wastewater from process (initial release prior to RMM): 0.5  
Release fraction to soil from process (initial release prior to RMM): 0.0

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

Risk from environmental exposure is driven by Freshwater [TCR1a].  
No wastewater treatment required [TCR6].  
Treat air emission to provide a typical removal efficiency of (%): 0  
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >=(%): 91.0  
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of >=(%): 0

## Organisation measures to prevent/limit release from site

Prevent discharge of undissolved substance to or recover from wastewater [OMS1]. Do not apply industrial sludge to natural soils [OMS2]. Sludge should be incinerated, contained or reclaimed [OMS3].

## Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 96.0  
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.0  
Maximum allowable site tonnage ( $M_{\text{Safe}}$ ) based on release following total wastewater treatment removal (kg/day): 560  
Assumed domestic sewage treatment plant flow ( $\text{m}^3/\text{day}$ ): 2000

## Conditions and measures related to external treatment of waste for disposal

During manufacturing no waste of the substance is generated [ETW4].

## Conditions and measures related to external recovery of waste

During manufacturing no waste of the substance is generated [ERW2].

## Section 3 Exposure estimation

### Health

The ECETOC TRA tool version 2 with modifications as outlined in the CSA has been used to estimate workplace exposures.

### Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model [EE2].

## Section 4 Guidance to check compliance with the Exposure Scenario

### Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented [G22].

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels [G23].

### Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures [DSU1]. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination [DSU2]. Required removal efficiency for air can be achieved using onsite technologies, either alone or in combination [DSU3]. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).