

Ref. 2.7/REG_EU/EN

FennoSpec 7810

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

Revision Date: 09.11.2018

Previous date: 07.12.2017

Print Date:16.07.2019

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**1.1 Product identifier****Commercial Product Name**
FennoSpec 7810**1.2 Relevant identified uses of the substance or mixture and uses advised against**
Use of the Substance/Mixture

Raw material for slimicide.

Recommended restrictions on use

Do not use for other purposes than the identified uses.

1.3 Details of the supplier of the safety data sheetKemira Oyj
P.O. Box 33000101 HELSINKI FINLAND
Telephone+358108611, Telefax. +358108621124
ProductSafety.FI.Helsinki@kemira.com**1.4 Emergency telephone number**

Carechem 24 International: +44 (0) 1235 239 670

SECTION 2: HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture****Classification according to Regulation (EU) 1272/2008(CLP)**

Skin corrosion; Category 1B; Causes severe skin burns and eye damage.

Acute toxicity; Category 4; Harmful if swallowed.

Acute toxicity; Category 4; Harmful if inhaled.

Corrosive to metals; Category 1; May be corrosive to metals.

2.2 Label elements**Labelling (REGULATION (EC) No 1272/2008)**

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Hazard pictograms

:



Signal word

: Danger

Hazard statements

: H314 H302 H332 H290	Causes severe skin burns and eye damage. Harmful if swallowed. Harmful if inhaled. May be corrosive to metals.
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Precautionary statements

: Prevention: P280 P260 P264	Wear protective gloves/ protective clothing/ eye protection/ face protection. Do not breathe vapours. Wash skin thoroughly with plenty of soap and water after handling.
Response:	
P301 + P330 + P331 P303 + P361 + P353 P304 + P340 P305 + P351 + P338 P309 + P311	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or if you feel unwell: Call a POISON CENTER or doctor/ physician.

Hazardous components which must be listed on the label:

- 64-18-6 Formic acid
- 7664-93-9 Sulfuric acid

Additional Labelling:

EUH071 Corrosive to the respiratory tract.

2.3 Other hazards

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SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

CAS/EU number/REACH Registration Number	Chemical name of the substance	Concentration	Classification according to Regulation (EU) 1272/2008(CLP)
64-18-6 200-579-1 01-2119491174-37-0003	Formic acid	70 - 80 %	Skin Corr. Category 1A,H314 Flam. Liq. Category 3,H226 Acute Tox. Category 4,H302 Acute Tox. Category 3,H331 EUH071
7664-93-9 231-639-5 01-2119458838-20	Sulfuric acid	5 - 15 %	Skin Corr. Category 1A,H314

Further information

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

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

Move to fresh air. Keep warm and in a quiet place. Obtain medical attention.

Skin contact

Wash off immediately with plenty of water removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 30 minutes. Call a physician immediately.

Ingestion

Rinse mouth. Few gulps of water can be drunk to reduce irritation. Do NOT induce vomiting. Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Causes severe burns.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Symptomatic treatment.

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SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Extinguishing media : Dry powder
Sand
Foam
Unsuitable : Water
extinguishing media

5.2 Special hazards arising from the substance or mixture

Heating can release hazardous gases.
Carbon monoxide, Sulphur oxides

5.3 Advice for firefighters

In the event of fire, wear self-contained breathing apparatus. Splashproof protective suit.

5.4 Specific methods

Cool containers/tanks with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Keep people away from and upwind of spill/leak. Avoid contact with skin and eyes. Wear personal protective equipment. For personal protection see section 8. Never add water to this product.

6.2 Environmental precautions

Should not be released into the environment. Dam up. Take up mechanically and collect into suitable containers for disposal. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder).

6.3 Methods and materials for containment and cleaning up

Neutralize with sodium carbonate. Dispose of as special waste in compliance with local and national regulations.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Use only in area provided with appropriate exhaust ventilation. Wear personal protective equipment. Handle and open container with care. Do not breathe gas/fumes/vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Wash hands before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

The product may form CO (carbon monoxide) under prolonged storage. Keep containers tightly closed in a cool, well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Protect

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from sunlight. Keep away from combustible material. Store in original container.
Materials for packaging
Suitable material: original acid resistant container

Materials to avoid:
Bases, Copper, Aluminium, Sulphides, Oxidizing agents, Water

7.3 Specific end use(s)

Raw material for slimicide.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Limit values in other countries

Finland:

Formic acid

FI OEL, 2005-04-01, HTP-arvot 8h = 3 ppm = 5 mg/m³

FI OEL, 2005-04-01, HTP-arvot 15 min = 10 ppm = 19 mg/m³

Sulfuric acid

FI OEL, 2011-12-09, HTP-arvot 8h = 0,05 mg/m³, thoracic fraction

FI OEL, 2011-12-09, HTP-arvot 15 min = 0,1 mg/m³, thoracic fraction

Sweden:

Formic acid

SE AFS, 2005-06-13, NGV = 3 ppm = 5 mg/m³

SE AFS, 2005-06-13, KTV = 5 ppm = 9 mg/m³

Sulfuric acid

SE AFS, 2012-06-01, NGV = 0,1 mg/m³

SE AFS, 2012-06-01, KTV = 0,2 mg/m³

Germany:

Formic acid

DE TRGS 900, 2006-01-01, AGW = 5 ppm = 9,5 mg/m³, DFG: Senate commission for the review of compounds at the work place dangerous for the health (MAK-commission)., 2;(I)

Sulfuric acid

DE TRGS 900, 2006, MAK = 0,1 mg/m³

DE TRGS 900, 2011-12-19, AGW = 0,1 mg/m³, Inhalable fraction, DFG: Senate commission for the review of compounds at the work place dangerous for the health (MAK-commission)., 1;(I)

Austria:

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Formic acid

AT OEL, 2006-06-29, TRK-TMW = 5 ppm = 9 mg/m³

AT OEL, 2006-06-29, TRK-KZW = 5 ppm = 9 mg/m³, Mow

Sulfuric acid

AT OEL, 2006-06-29, TRK-TMW = 1 mg/m³, inhalable fraction

AT OEL, 2006-06-29, TRK-KZW = 2 mg/m³, inhalable fraction, 8 x 5 mins (Mow)

AT OEL, 2011-12-19, TRK-TMW = 0,05 mg/m³, thoracic fraction, : When selecting a suitable measuring method, possible interference from other sulfur compounds should be avoided.

Belgium:

Formic acid

BE OEL, 2006-03-23, TLV 8 hr = 5 ppm = 9,5 mg/m³

BE OEL, 2006-03-23, TLV 15 min = 10 ppm = 19 mg/m³

Sulfuric acid

BE OEL, 2006-03-23, TLV 8 hr = 1 mg/m³

BE OEL, 2006-03-23, TLV 15 min = 3 mg/m³

BE OEL, 2014-04-14, TLV 8 hr = 0,2 mg/m³, Mist, (9): When selecting an appropriate exposure monitoring method, account should be taken of potential limitations and interferences that may arise in the presence of other sulphur compounds.

Switzerland:

Formic acid

CH SUVA, 2007-01-01, TWA = 5 ppm = 9,5 mg/m³, NIOSH: National Institute for Occupational Safety and Health

CH SUVA, 2007-01-01, STEL = 10 ppm = 19 mg/m³, NIOSH: National Institute for Occupational Safety and Health, 4 times 15 min. per shift

Sulfuric acid

CH SUVA, 2007-01-01, TWA = 0,1 mg/m³, inhalable dust, NIOSH: National Institute for Occupational Safety and Health

CH SUVA, 2007-01-01, STEL = 0,1 mg/m³, inhalable dust, NIOSH: National Institute for Occupational Safety and Health

Czech Republic:

Formic acid

CZ OEL, 2004-07-27, TWA = 9 mg/m³

CZ OEL, 2004-07-27, CEIL = 18 mg/m³

Sulfuric acid

CZ OEL, 2004-07-27, TWA = 1 mg/m³, SO₃

CZ OEL, 2004-07-27, CEIL = 2 mg/m³, SO₃

CZ OEL, 2012-03-26, TWA = 0,05 mg/m³, concentrated acid mist, SO₃, I: irritating to mucous membranes (eyes, respiratory system) respectively skin

Denmark:

Formic acid

DK OEL, 2007-08-01, GV = 5 ppm = 9 mg/m³, : Guiding list of organic solvents.

Sulfuric acid

DK OEL, 2005-04-01, GV = 1 mg/m³

DK OEL, 2011-12-08, GV = 0,05 mg/m³, mist, thoracic fraction, E: The substance has an EC-limit value

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Estonia:

Formic acid

EE OEL, 2001-09-18, TWA = 5 ppm = 9 mg/m³

EE OEL, 2001-09-18, STEL = 5 ppm = 9 mg/m³

EE OEL, 2007-10-11, Piirnorm = 5 ppm = 9 mg/m³

Sulfuric acid

EE OEL, 2001-09-18, TWA = 1 mg/m³, Vapour

EE OEL, 2001-09-18, STEL = 3 mg/m³, Vapour

EE OEL, 2011-11-30, Lühiajalise kokkupuute piirnorm = 0,05 mg/m³, Mist, 28: The selectec exposure monitoring method must take into account the potential limitations and problems that may occur in the presence of sulfur compounds.

Spain:

Formic acid

ES VLA, 2001-07-01, VLA-EC = 10 ppm = 18 mg/m³

ES VLA, 2008-02-12, VLA-ED = 5 ppm = 9 mg/m³, VLI: Chemical agent with an indicative limit value established by the EU. All these chemicals are contained in at least one of the directives of indicative limit values published so far (see Appendix C. Bibliography). Member states shall transpose the limits set in the Directives within a certain time frame. Once adopted, these values have the same validity as the rest of the values adopted by the country.

Sulfuric acid

ES VLA, 2006-01-01, VLA-ED = 1 mg/m³

ES VLA, 2006-01-01, VLA-EC = 3 mg/m³

ES VLA, 2012-01-01, VLA-ED = 0,05 mg/m³, thoracic fraction, az: When selecting an appropriate method of exposure control, possible limitations and interference that can arise in the presence of other sulfur compounds should be taken into account.

ES VLA, 2014-01-01, VLA-ED = 0,05 mg/m³, Mist, az: When selecting an appropriate method of exposure control, possible limitations and interference that can arise in the presence of other sulfur compounds should be taken into account.

France:

Formic acid

FR VLE, 2007-12-01, VLCT (VLE) = 5 ppm = 9 mg/m³, blue: Regulatory indicative exposure limits

Sulfuric acid

FR VLE, 2005-02-01, VME = 1 mg/m³, normal: Indicative exposure limits

FR VLE, 2005-02-01, VLCT (VLE) = 3 mg/m³, normal: Indicative exposure limits

FR VLE, 2012-07-01, VME = 0,05 mg/m³, Thoracic fraction, blue: Regulatory indicative exposure limits

Great Britain:

Formic acid

GB EH40, 2005-04-06, TWA = 5 ppm = 9,6 mg/m³, 2: Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used

Greece:

Formic acid

GR OEL, 1999-05-13, TWA = 5 ppm = 9 mg/m³

Sulfuric acid

GR OEL, 1999-05-13, TWA = 1 mg/m³

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GR OEL, 2012-02-09, TWA = 0,05 mg/m³, thoracic, (7): When selecting an appropriate exposure monitoring method, account should be taken of potential limitations and interferences that may arise in the presence of other sulphur compounds.

Hungary:

Formic acid

HU OEL, 2002-01-01, PEAK = 9 mg/m³, m: caustic substance (burns the skin, mucous membranes, eyes or all three)

HU OEL, 2007-12-22, TWA = 9 mg/m³, EU2: Value disclosed in Directive 2006/15/EC

Sulfuric acid

HU OEL, 2002-11-28, TWA = 1 mg/m³, m: Corrosive substance (corrodes the skin, the mucous membrane and the eyes or all three)

HU OEL, 2002-11-28, STEL = 1 mg/m³, m: Corrosive substance (corrodes the skin, the mucous membrane and the eyes or all three), I

HU OEL, 2011-12-22, TWA = 0,05 mg/m³, thoracic fraction, EU4: Value disclosed in Directive 2009/161/EC

Ireland:

Formic acid

IE OEL, 2007-08-17, OELV - 8 hrs (TWA) = 5 ppm = 9 mg/m³, : Where no specific short-term exposure limit is listed, a figure three times the long-term exposure limit value should be used

Sulfuric acid

IE OEL, 2007-08-17, OELV - 8 hrs (TWA) = 1 mg/m³, : Where no specific short-term exposure limit is listed, a figure three times the long-term exposure limit value should be used

Italy:

Formic acid

IT OEL, 2008-02-26, TWA = 5 ppm = 9 mg/m³

Lithuania:

Formic acid

LT OEL, 2001-12-13, IPRD = 5 ppm = 9 mg/m³

Sulfuric acid

LT OEL, 2001-12-12, TWA = 1 mg/m³, Vapour

LT OEL, 2001-12-12, STEL = 3 mg/m³, Vapour

LT OEL, 2011-09-01, IPRD = 0,05 mg/m³, Vapour, respirable, : When choosing the proper monitoring of the impact model, one must take into account possible constraints and bottlenecks that can occur when there are other sulfur compounds

LT OEL, 2011-09-01, TPRD = 3 mg/m³, Vapour, respirable, : When choosing the proper monitoring of the impact model, one must take into account possible constraints and bottlenecks that can occur when there are other sulfur compounds

Luxembourg:

Formic acid

LU OEL, 2002-08-26, TWA = 5 ppm = 9 mg/m³

Latvia:

Formic acid

LV OEL, 2007-05-18, AER 8 st = 5 ppm = 9 mg/m³

Sulfuric acid

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LV OEL, 2007-05-18, AER 8 st = 1 mg/m³

LV OEL, 2011-02-01, AER 8 st = 0,05 mg/m³, Mist, thoracic fraction, 3: When selecting an appropriate exposure monitoring method, account should be taken of potential limitations and interferences that may arise in the presence of other sulphur compounds

Netherlands:
Formic acid

NL OEL, 2007-01-01, STEL = 5 mg/m³
Norway:
Formic acid

FOR-2011-12-06-1358, 2003-10-01, TWA = 5 ppm = 9 mg/m³
Sulfuric acid

NO OEL, 2001-05-01, TWA = 0,2 mg/m³, aerosol, : Provisional

NO OEL, 2001-05-01, TWA = 0,1 mg/m³, aerosol, : To be used where already possible

FOR-2011-12-06-1358, 2015-01-09, TWA = 0,1 mg/m³, aerosol, thoracic fraction, E: The EU has set an indicative limit value for this substance

Poland:
Formic acid

PL OEL, 2002-11-29, NDS = 5 mg/m³

PL OEL, 2002-11-29, NDSch = 15 mg/m³
Sulfuric acid

PL OEL, 2002-11-29, NDS = 1 mg/m³

PL OEL, 2002-11-29, NDSch = 3 mg/m³

PL OEL, 2014-06-23, NDS = 0,05 mg/m³, thoracic fraction, Thoracic fraction: Thoracic fraction - the fraction of aerosol that penetrates into the airways in the chest, which poses a threat to the health of the deposit in the tracheo-bronchial and gas exchange area.

Portugal:
Formic acid

PT OEL, 2007-03-26, VLE-MP = 5 ppm, (1): Included by specific national legislation or by not transposed community legislation

PT OEL, 2007-03-26, VLE_CD = 10 ppm, (1): Included by specific national legislation or by not transposed community legislation

Sulfuric acid

PT OEL, 2003-10-01, TWA = 1 mg/m³

PT OEL, 2003-10-01, STEL = 3 mg/m³

PT OEL, 2007-03-26, VLE-MP = 0,2 mg/m³, Thoracic fraction, A2: Substances that are suspected of being carcinogenic for humans.

PT DL 305/2007, 2012-02-06, TWA = 0,05 mg/m³, mist, thoracic fraction, (8): When selecting an appropriate exposure monitoring method, account should be taken of potential limitations and interferences that may arise in the presence of other sulphur compounds

Slovenia:
Formic acid

SI OEL, 2007-06-15, MV = 5 ppm = 9 mg/m³, EU: Maximum level set by Commission Directive of 29 May 1991 on establishing indicative limit values in accordance with Council Directive 80/1107/EEC on the protection of workers from risks related to exposure to chemical, physical and biological agents at work (OJ L no. 177 dated 5 July 1991, p. 22).

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Sulfuric acid

SI OEL, 2007-06-15, MV = 0,1 mg/m³, Inhalable fraction, Measured as sulphuric acid, Y: Substances without teratogenic effects when respecting limit values and bat values.

SI OEL, 2011-06-01, MV = 0,05 mg/m³, Inhalable fraction - mist, sulphuric acid, EU: Maximum level set by Commission Directive of 29 May 1991 on establishing indicative limit values in accordance with Council Directive 80/1107/EEC on the protection of workers from risks related to exposure to chemical, physical and biological agents at work (OJ L no. 177 dated 5 July 1991, p. 22).

Slovakia:

Formic acid

SK OEL, 2006-06-01, TWA = 5 ppm = 9 mg/m³

Sulfuric acid

SK OEL, 2006-06-01, TWA = 0,1 mg/m³

SK OEL, 2006-06-01, CEIL = 0,1 mg/m³

SK OEL, 2011-11-23, TWA = 0,05 mg/m³, Mist

DNEL

Sulfuric acid

: Exposure routes: Worker - inhalative, short-term - local
Value: 0,1 mg/m³

Exposure routes: Worker - inhalative, long-term - local
Value: 0,05 mg/m³

PNEC

Sulfuric acid

: Fresh water
Value: 0,0025 mg/l

Marine water
Value: 0,00025 mg/l

Fresh water sediment
Value: 0,002 mg/kg wet weight

Marine sediment
Value: 0,002 mg/kg wet weight

STP
Value: 8,8 mg/l

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Ensure adequate ventilation. Ensure that eyewash stations and safety showers are close to the workstation location.

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8.2.2 Individual protection measures, such as personal protective equipment

Hand protection

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Eye protection

Tightly fitting safety goggles / Face-shield

Skin and body protection

Impervious clothing

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. (filter E)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

General Information (appearance, odour)

Physical state	liquid,
Colour	colourless, clear
Odour	pungent

Important health safety and environmental information

pH	1,66 (24,7 °C) (CIPAC, MT 75) (1 % solution)
Freezing point :	-27,0 °C
Boiling point/boiling range	> 100 °C
Flash point	minimum 63,5 °C (EU A.9, OPPTS 830.6315, UN 32.4) max. 64,1 °C (EU A.9, OPPTS 830.6315, UN 32.4)
Explosive properties:	
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Density	minimum 1,2706 g/cm ³ (20 °C) (OECD Test Guideline 109) max. 1,2708 g/cm ³ (20 °C) (OECD Test Guideline 109)
Solubility(ies):	
Water solubility	completely soluble
Viscosity:	
Viscosity, dynamic	minimum 2 814 mPa.s (20 °C) (DIN 53015)

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max. 2 816 mPa.s (20 °C) (DIN 53015)
1 822 mPa.s (40 °C) (DIN 53015)

9.2 Other data

Surface tension	minimum 72,65 mN/m (OECD 115, EC A.5)
Corrosion	max. 72,71 mN/m (OECD 115, EC A.5)
	< 6,25 mm/a (UN 37.4 C.1)
	steel (1.0037)
	not corrosive
	> 6,25 mm/a (UN 37.4 C.1)
	aluminium AL7075-T6
	corrosive

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Never add water to this product.

10.2 Chemical stability

Strong acid decomposes slowly to form CO (carbon monoxide).

10.3 Possibility of hazardous reactions

Hazardous reactions : Do not add water into strong acid (risk of splashes).
Note: The product may form CO (carbon monoxide) under prolonged storage.

10.4 Conditions to avoid

Conditions to avoid : High temperatures.

10.5 Incompatible materials

Materials to avoid : Bases
Copper
Aluminium
Sulphides
Oxidizing agents
Water

10.6 Hazardous decomposition products

Hazardous decomposition products : Thermal decomposition products:
Carbon oxides
Sulphur oxides

: Strong acid decomposes slowly to form CO (carbon

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monoxide).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

Formic acid:

LD50/Oral/Rat/male and female: 730 mg/kg

LC50/Inhalation/4 h/Rat/male and female: 7,4 mg/l

Sulfuric acid:

LD50/Oral/Rat: 2 140 mg/kg

LC50/Inhalation/4 h/Rat: 0,375 mg/l

Remarks: aerosol

Although the LC50 values from the various inhalation toxicity studies performed with sulphuric acid theoretically trigger classification for Acute inhalation toxicity, classification is not proposed. The effects of sulphuric acid following inhalation are entirely due to local irritation of the respiratory tract: there is no evidence for the systemic toxicity of sulphuric acid in any study, as effects are limited to the site of contact. Classification for acute inhalation toxicity is not considered to be appropriate.

Irritation and corrosion

Skin: Causes severe burns.

Eyes: Risk of serious damage to eyes.

Mucous membranes:

At high concentrations vapours may cause inflammation of conjunctiva and cornea.

Formic acid:

Skin: Corrosive

Eyes: Corrosive

Sulfuric acid:

Skin: Corrosive

Causes severe burns.

Eyes: Corrosive

Risk of serious damage to eyes.

Sensitisation

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No data available

Formic acid:

Guinea pig/Buehler Test/OECD Test Guideline 406: Not sensitizing.

This substance is not classified as a sensitizer.

Sulfuric acid:

Not sensitizing.

Long term toxicity

Formic acid:

Repeated dose toxicity:

Oral/Rat/male and female/1 year/OECD Test Guideline 453:

NOAEL: 142 mg/kg

Remarks: calculated , Read-across (Analogy)

Inhalation/Rat/male and female/13 weeks/OECD Test Guideline 413:

Remarks: NOAEC : Local 0,122 mg/l , Systemic toxicity 0,244 mg/l

Carcinogenicity

Did not show carcinogenic effects in animal experiments. Information given is based on data obtained from similar substances.

Mutagenicity

Salmonella typhimurium (bacterium)/Ames test/OECD Test Guideline 471:

Result: negative

Metabolic activation: with and without

mammalian cells (CHO)/In vitro gene mutation study in mammalian cells/OECD Test Guideline 476:

Result: negative

Metabolic activation: with and without

In vitro cytogenicity study in mammalian cells/Cytogenetic assay/OECD Test Guideline 479:

Result: negative

Metabolic activation: with and without

Human lymphocytes/Cytogenetic assay/OECD Test Guideline 479:

Result: negative

Metabolic activation: no

oral/Drosophila melanogaster (Common fruit fly)/male/Drosophila SLRL/OECD Test Guideline 477:

Result: negative

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Reproductive toxicity

Oral/Rat/male and female/Two-generation reproductive toxicity/OECD Test Guideline 416:

NOAEL: 676 mg/kg

NOAEL F1: 676 mg/kg

Remarks: calculated Read-across (Analogy)

In animal studies, did not interfere with reproduction. Information given is based on data obtained from similar substances.

Teratogenicity

Oral:

Animal testing did not show any effects on foetal development. Information given is based on data obtained from similar substances.

Sulfuric acid:

Repeated dose toxicity:

Inhalation/Rat/28 d:

NOAEL: = 0,0003 mg/l

Carcinogenicity

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

Remarks: IARC

Based on very limited human data, International Agency for Research on Cancer (IARC) has classified strong inorganic acid mists as carcinogenic to humans. However, IARC has not classified pure sulphuric acid for its carcinogenic effects.

Mutagenicity

mammalian cells (CHO)/Chromosome aberration test in vitro:

Result: positive

Metabolic activation: with and without

Due to its pH.

Salmonella typhimurium (bacterium)/Ames test:

Result: negative

Metabolic activation: with and without

Teratogenicity

Inhalation/Rabbit:

NOAEL: 0,020 mg/l

Did not show teratogenic effects in animal experiments.

Inhalation/Mouse:

NOAEL: 0,020 mg/l

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Did not show teratogenic effects in animal experiments.

Human experience

Skin contact
May cause skin irritation and/or dermatitis.
Eye contact
vapour,
Remarks: At high concentrations
May cause: Inflammation

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity

Formic acid:

LC50/96 h/Danio rerio (zebra fish)/static test/OECD Test Guideline 203: 130 mg/l
fresh water Test results on an analogous product
EC50/48 h/Daphnia magna (Water flea)/static test/OECD Test Guideline 202: 365 mg/l
fresh water Mobility Test results on an analogous product
EC50/72 h/Pseudokirchneriella subcapitata (microalgae)/static test/OECD Test Guideline 201: 1 240 mg/l
fresh water Test results on an analogous product

Sulfuric acid:

LC50/96 h/Lepomis macrochirus (bluegill sunfish)/static test: 16 - 28 mg/l
fresh water
NOEC/1 560 h/Jordanella floridae (Flagfish)/flow-through test: 0,025 mg/l
fresh water
EC50/48 h/Daphnia magna (Water flea)/static test/OECD Test Guideline 202: > 100 mg/l
fresh water
EC50/72 h/Desmodesmus subspicatus (green algae)/static test/OECD Test Guideline 201: > 100 mg/l
Remarks: May be harmful to aquatic organisms because of the low pH value.

Toxicity to other organisms

Formic acid:

NOEC/13 d/active sludge, community/static test/Algal inhibition test: 72 mg/l
Remarks: fresh water
Respiration inhibition of activated sludge : no (at low concentrations)

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Sulfuric acid:

NOEC/37 d/active sludge/static test: 26 g/l
fresh water

NOEC/30 d/active sludge/static test: > 30 g/l
fresh water

12.2 Persistence and degradability

Chemical Oxygen Demand (COD): 348 mg/g

Biological degradability:

Formic acid:

Readily biodegradable, according to appropriate OECD test.

Biodegradability in Seawater : Readily biodegradable

Sulfuric acid:

The methods for determining biodegradability are not applicable to inorganic substances.

Chemical degradation:

Formic acid:

t_{1/2}-value: > 5 Days(pH , 50 °C) (Hydrolysis)

Remarks: pH 4/7/9

Does not hydrolyse.

t_{1/2}-value: 30,1 Days (Photodegradation)

Degradation by hydroxyl radicals.

12.3 Bioaccumulative potential

Bioaccumulation is unlikely.

Formic acid:

Bioconcentration factor (BCF)/calculated: 3,2

Does not significantly accumulate in organisms.

Partition coefficient: n-octanol/water: log Pow: -2,1 (Directive 84/449/ EEC, A.8); Does not significantly accumulate in organisms.

Sulfuric acid:

Does not bioaccumulate.

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12.4.Mobility in soil

Mobility

Water solubility: completely soluble
Surface tension: minimum 72,65 mN/m
max. 72,71 mN/m

Formic acid:

Vapour pressure:42,71 hPa (20 °C) (OECD Test Guideline 104)

Henry's Constant:0,019 Pa m³/mol (25 °C); The substance will not evaporate into the atmosphere from the water surface.

Surface tension: 71,5 mN/m (20 °C) (OECD Test Guideline 115); Surface activity is not to be expected.

Adsorption and/or desorption: Not expected to adsorb on soil.

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).

This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

No data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Dispose of as special waste in compliance with local and national regulations.

Contaminated packaging

In accordance with local and national regulations.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

3265

Land transport

ADR:

Description of the goods:

14.2 UN proper shipping name

CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Formic acid , Sulphuric acid)

14.3 Transport hazard class(es)

8

14.4 Packing group:

II

Classification code:

C3

Risk code

80

ADR/RID-Labels:

8

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Sea transport

IMDG:

Description of the goods:

14.2 UN proper shipping name UN3265, CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (FORMIC ACID , SULPHURIC ACID)

14.3 Transport hazard class(es): 8

14.4 Packing group: II

IMDG-Labels: 8

14.5 Environmental hazards: Not a Marine Pollutant

Air transport

ICAO/IATA:

Description of the goods

14.2 UN proper shipping name UN3265, Corrosive liquid, acidic, organic, n.o.s. (Formic acid , Sulphuric acid)

14.3 Transport hazard class(es): 8

14.4 Packing group: II

ICAO-Labels: 8

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

14.8 Special precautions for user

The product may form CO (carbon monoxide) under prolonged storage.

SECTION 15: REGULATORY INFORMATION

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

- Other regulations :
- In the EU, this product falls under the regulation on biocidal products 528/2012.
 - In the EU, this product falls under the regulation on biocidal products 528/2012.
 - In the EU, this product falls under the regulation on biocidal products 528/2012.

Notification status

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:

15.2 Chemical safety assessment

not required

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under section 3.

H314	Causes severe skin burns and eye damage.
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H331	Toxic if inhaled.
EUH071	Corrosive to the respiratory tract.
H314	Causes severe skin burns and eye damage.

Training advice

Read the safety data sheet before using the product.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.

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Annex

Contents: Exposure scenario

1. Formulation & (re)packing of substance and mixtures

SU 3; SU 10; ERC2; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15;

2. Use as intermediate

SU 3; SU8; ERC6a; PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15;

3. Uses in coatings

SU 3; ERC4; PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15;

4. Use in cleaning agents

SU 22; ERC8a, ERC8d; PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC19;

5. Use in cleaning agents

SU 21; ERC8a, ERC8d; PC35;

6. Use in laboratories

SU 3; ERC4; PROC15;

7. Use in laboratories

SU 22; ERC8a; PROC15;

8. Industrial manufacture of polymers, resins

SU 3; SU12; ERC6c; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14;

9. Polymer processing

SU 3; SU 10; ERC6d; PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC13, PROC14;

10. Polymer processing

SU 22; ERC8a, ERC8c, ERC8d, ERC8f; PROC1, PROC2, PROC8a, PROC8b, PROC14;

11. Use as processing aid

SU 3; SU5, SU 10; ERC2, ERC4, ERC5, ERC6b; PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19;

12. Use as processing aid

SU 22; ERC8c, ERC8d, ERC8f, ERC10a, ERC11a; PROC1, PROC2, PROC3, PROC4,

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PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19;

13. Use as processing aid

SU 21; ERC8c, ERC8d, ERC8f, ERC10a, ERC11a; PC23, PC32, PC34;

14. Animal nutrition

SU 22; ERC8a, ERC8b; PROC5, PROC10, PROC11, PROC13, PROC19;

15. Use as preserving agent

SU 22; ERC8a, ERC8b; PROC5, PROC10, PROC11, PROC13, PROC19;

1. Short title of Exposure Scenario: Formulation & (re)packing of substance and mixtures

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	: SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent
Environmental release category	: ERC2: Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: ERC2

2.2 Contributing scenario controlling worker exposure for: PROC1

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Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

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Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC5, PROC9, PROC14

Product characteristics

Concentration of the Substance in : Covers the percentage of the substance in the product up to

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Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.7 Contributing scenario controlling worker exposure for: PROC8a

Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.8 Contributing scenario controlling worker exposure for: PROC8b

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).

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Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 97 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.9 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

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Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m ³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term - local	0,039 mg/m ³	0,002
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203
PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203
PROC3	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC3	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC4	ECETOC TRA modified version		Worker - inhalative, long-term - local	3,858 mg/m ³	0,406
PROC4	ECETOC TRA modified version		Worker - inhalative, short-term - local	7,717 mg/m ³	0,406
PROC5, PROC9, PROC14	ECETOC TRA modified version		Worker - inhalative, long-term - local	8,681 mg/m ³	0,914
PROC5, PROC9, PROC14	ECETOC TRA modified version		Worker - inhalative, short-term - local	17,363 mg/m ³	0,914
PROC8a	ECETOC TRA modified version		Worker - inhalative, long-term - local	8,681 mg/m ³	0,914
PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	17,363 mg/m ³	0,914
PROC8b	ECETOC TRA modified version		Worker - inhalative, long-term - local	2,864 mg/m ³	0,305

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			term - local		
PROC8b	ECETOC TRA modified version		Worker - inhalative, short-term - local	5,788 mg/m ³	0,305
PROC15	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203
PROC15	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

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1. Short title of Exposure Scenario: Use as intermediate

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	: SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC15: Use as laboratory reagent
Environmental release category	: ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

2.1 Contributing scenario controlling environmental exposure for: ERC6a

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

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Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

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Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC8a

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

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Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.7 Contributing scenario controlling worker exposure for: PROC8b

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 97 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.8 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

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Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source
Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term - local	0,039 mg/m³	0,002
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m³	0,203
PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m³	0,203
PROC3	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m³	0,508
PROC3	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m³	0,508
PROC4	ECETOC TRA		Worker -	3,858 mg/m³	0,406

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	modified version		inhalative, long-term - local		
PROC4	ECETOC TRA modified version		Worker - inhalative, short-term - local	7,717 mg/m ³	0,406
PROC8a	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC8b	ECETOC TRA modified version		Worker - inhalative, long-term - local	2,864 mg/m ³	0,305
PROC8b	ECETOC TRA modified version		Worker - inhalative, short-term - local	5,788 mg/m ³	0,305
PROC15	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203
PROC15	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

1. Short title of Exposure Scenario: Uses in coatings

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental release category	: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

2.1 Contributing scenario controlling environmental exposure for: ERC4

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Covers the percentage of the substance in the product up to

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Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

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Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
 Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC5

Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

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Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.7 Contributing scenario controlling worker exposure for: PROC7

Product characteristics

Concentration of the Substance in Mixture/Article : 30 %
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Two hands and forearms (1500 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.8 Contributing scenario controlling worker exposure for: PROC8a

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Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.9 Contributing scenario controlling worker exposure for: PROC8b

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 97 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

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2.10 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:, Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.11 Contributing scenario controlling worker exposure for: PROC13

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.12 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m ³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term - local	0,039 mg/m ³	0,002
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203

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PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203
PROC3	ECETOC TRA modified version		Worker - inhalative, long- term - local	4,823 mg/m ³	0,508
PROC3	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC4	ECETOC TRA modified version		Worker - inhalative, long- term - local	3,858 mg/m ³	0,406
PROC4	ECETOC TRA modified version		Worker - inhalative, short-term - local	7,717 mg/m ³	0,406
PROC5	ECETOC TRA modified version		Worker - inhalative, long- term - local	4,823 mg/m ³	0,508
PROC5	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC7	ECETOC TRA modified version		Worker - inhalative, long- term - local	7,234 mg/m ³	0,761
PROC7	ECETOC TRA modified version		Worker - inhalative, short-term - local	14,469 mg/m ³	0,762
PROC8a	ECETOC TRA modified version		Worker - inhalative, long- term - local	4,823 mg/m ³	0,508
PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC8b	ECETOC TRA modified version		Worker - inhalative, long- term - local	2,864 mg/m ³	0,305
PROC8b	ECETOC TRA modified version		Worker - inhalative, short-term - local	5,788 mg/m ³	0,305
PROC10	ECETOC TRA modified version		Worker - inhalative, long-	4,823 mg/m ³	0,508

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			term - local		
PROC10	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC13	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC13	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC15	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203
PROC15	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

1. Short title of Exposure Scenario: Use in cleaning agents

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available
Environmental release category	: ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in	Covers the percentage of the substance in the product up to
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Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

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Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.5 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.6 Contributing scenario controlling worker exposure for: PROC8a

Product characteristics

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Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.7 Contributing scenario controlling worker exposure for: PROC8b

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

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2.8 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Concentration of the Substance in Mixture/Article Limit the substance content in the mixture to 50 %.
 Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
 (Effectiveness: 95 %)

2.9 Contributing scenario controlling worker exposure for: PROC11

Product characteristics

Concentration of the Substance in Mixture/Article Covers percentage substance in the product up to 15%.
 Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Two hands and forearms (1500 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

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Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.10 Contributing scenario controlling worker exposure for: PROC13

Product characteristics

Concentration of the Substance in Mixture/Article	Limit the substance content in the mixture to 50 %.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration	: > 480 min
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Human factors not influenced by risk management

Exposed skin area	: Palms of both hands (480 cm ²)
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Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
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Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.11 Contributing scenario controlling worker exposure for: PROC19

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration	: > 480 min
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Human factors not influenced by risk management

Exposed skin area	: Both hands and forearms (1980 cm ²)
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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE.: Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 90 %)

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m ³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term - local	0,039 mg/m ³	0,002
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC3	ECETOC TRA modified version		Worker - inhalative, long-term - local	2,411 mg/m ³	0,254
PROC3	ECETOC TRA modified version		Worker - inhalative, short-term - local	4,823 mg/m ³	0,254
PROC4	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC4	ECETOC TRA		Worker -	9,464 mg/m ³	0,508

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	modified version		inhalative, short-term - local		
PROC8a	ECETOC TRA modified version		Worker - inhalative, long- term - local	7,717 mg/m ³	0,812
PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC8b	ECETOC TRA modified version		Worker - inhalative, long- term - local	7,717 mg/m ³	0,812
PROC8b	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC10	ECETOC TRA modified version		Worker - inhalative, long- term - local	4,823 mg/m ³	0,508
PROC10	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC11	ECETOC TRA modified version		Worker - inhalative, long- term - local	7,234 mg/m ³	0,761
PROC11	ECETOC TRA modified version		Worker - inhalative, short-term - local	14,469 mg/m ³	0,762
PROC13	ECETOC TRA modified version		Worker - inhalative, long- term - local	4,823 mg/m ³	0,508
PROC13	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,464 mg/m ³	0,508
PROC19	ECETOC TRA modified version		Worker - inhalative, long- term - local	3,280 mg/m ³	0,345
PROC19	ECETOC TRA modified version		Worker - inhalative, short-term - local	16,398 mg/m ³	0,863

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Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

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1. Short title of Exposure Scenario: Use in cleaning agents

Main User Groups	: SU 21: Consumer uses: Private households (= general public = consumers)
Product category	: PC35: Washing and cleaning products (including solvent based products)
Environmental release category	: ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

2.2 Contributing scenario controlling consumer exposure for: PC35

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 7.5%
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Amount used

Applied amount	: 0,025 l
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Frequency and duration of use

Exposure duration	: 15 min
Application duration	: 120 min

Human factors not influenced by risk management

Body weight	: 65 kg
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Other given operational conditions affecting consumers exposure

Room size	: 58 m ³
Ventilation rate per hour	: 0,5

3. Exposure estimation and reference to its source

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PC35	EASY TRA v2.0		Acute inhalation local exposure	2,694 mg/m ³	0,898
PC35	EASY TRA v2.0		Chronic inhalation local exposure	1,937 mg/m ³	0,215

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1., .

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

All relevant information on the safe consumer use has been outlined in the section 2., If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required., www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp

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1. Short title of Exposure Scenario: Use in laboratories

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	: PROC15: Use as laboratory reagent
Environmental release category	: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

2.1 Contributing scenario controlling environmental exposure for: ERC4

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration	: > 480 min
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Human factors not influenced by risk management

Exposed skin area	: Palm of one hand (240 cm ²)
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Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
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Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC15	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203
PROC15	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

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1. Short title of Exposure Scenario: Use in laboratories

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: PROC15: Use as laboratory reagent
Environmental release category	: ERC8a: Wide dispersive indoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration	: > 480 min
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Human factors not influenced by risk management

Exposed skin area	: Palm of one hand (240 cm ²)
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Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
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Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC15	ECETOC TRA modified version		Worker - inhalative, long-term - local	3,858 mg/m ³	0,406
PROC15	ECETOC TRA modified version		Worker - inhalative, short-term - local	7,717 mg/m ³	0,406

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

1. Short title of Exposure Scenario: Industrial manufacture of polymers, resins

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	: SU12: Manufacture of plastics products, including compounding and conversion
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation
Environmental release category	: ERC6c: Industrial use of monomers for manufacture of thermoplastics

2.1 Contributing scenario controlling environmental exposure for: ERC6c

2.2 Contributing scenario controlling worker exposure for: PROC1

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Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).

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Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC5

Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

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Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.7 Contributing scenario controlling worker exposure for: PROC8a

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

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2.8 Contributing scenario controlling worker exposure for: PROC8b

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 97 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.9 Contributing scenario controlling worker exposure for: PROC9, PROC14

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

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Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m ³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term - local	0,039 mg/m ³	0,002
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203
PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203
PROC3	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC3	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC4	ECETOC TRA modified version		Worker - inhalative, long-term - local	3,858 mg/m ³	0,406
PROC4	ECETOC TRA modified version		Worker - inhalative, short-term - local	7,717 mg/m ³	0,406
PROC5	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC5	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508

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PROC8a	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC8b	ECETOC TRA modified version		Worker - inhalative, long-term - local	2,864 mg/m ³	0,305
PROC8b	ECETOC TRA modified version		Worker - inhalative, short-term - local	5,788 mg/m ³	0,305
PROC9, PROC14	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC9, PROC14	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

1. Short title of Exposure Scenario: Polymer processing

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	: SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation
Environmental release category	: ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

2.1 Contributing scenario controlling environmental exposure for: ERC6d

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2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

Concentration of the Substance in : Covers the percentage of the substance in the product up to

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Mixture/Article 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC5, PROC9, PROC13, PROC14

Product characteristics

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Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.7 Contributing scenario controlling worker exposure for: PROC6, PROC8a

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.8 Contributing scenario controlling worker exposure for: PROC8b

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Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 97 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m ³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term - local	0,039 mg/m ³	0,002
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203
PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203
PROC3	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC3	ECETOC TRA		Worker -	9,646 mg/m ³	0,508

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	modified version		inhalative, short-term - local		
PROC4	ECETOC TRA modified version		Worker - inhalative, long- term - local	3,858 mg/m ³	0,406
PROC4	ECETOC TRA modified version		Worker - inhalative, short-term - local	7,717 mg/m ³	0,406
PROC5, PROC9, PROC13, PROC14	ECETOC TRA modified version		Worker - inhalative, long- term - local	7,717 mg/m ³	0,812
PROC5, PROC9, PROC13, PROC14	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC6, PROC8a	ECETOC TRA modified version		Worker - inhalative, long- term - local	7,717 mg/m ³	0,812
PROC6, PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC8b	ECETOC TRA modified version		Worker - inhalative, long- term - local	2,864 mg/m ³	0,305
PROC8b	ECETOC TRA modified version		Worker - inhalative, short-term - local	5,788 mg/m ³	0,305

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

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

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Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

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1. Short title of Exposure Scenario: Polymer processing

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation
Environmental release category	: ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8c, ERC8d, ERC8f

2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

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Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk managementExposed skin area : Palm of one hand (240 cm²)**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk managementExposed skin area : Palms of both hands (480 cm²)**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC8a

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 20%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk managementExposed skin area : Both hands (960 cm²)

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC8b

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC14

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 20%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m ³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term - local	0,039 mg/m ³	0,002
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC8a	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC8b	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC8b	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812

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PROC14	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC14	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

1. Short title of Exposure Scenario: Use as processing aid

Main User Groups	: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	: SU5: Manufacture of textiles, leather, fur SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental release category	: ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6b: Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC5, ERC6b

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2.3 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.7 Contributing scenario controlling worker exposure for: PROC5, PROC9, PROC13, PROC14

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.8 Contributing scenario controlling worker exposure for: PROC6, PROC8a

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

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Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.9 Contributing scenario controlling worker exposure for: PROC7

Product characteristics

Concentration of the Substance in Mixture/Article : 30 %
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Two hands and forearms (1500 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE.: Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.10 Contributing scenario controlling worker exposure for: PROC8b

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 97 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.11 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a full face respirator conforming to EN140 with Type A filter or better. (Effectiveness: 95 %)

2.12 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

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Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.13 Contributing scenario controlling worker exposure for: PROC19

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2.5%
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands and forearms (1980 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m ³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term -	0,039 mg/m ³	0,002

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			local		
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	1,929 mg/m ³	0,203
PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203
PROC3	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC3	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC4	ECETOC TRA modified version		Worker - inhalative, long-term - local	3,858 mg/m ³	0,406
PROC4	ECETOC TRA modified version		Worker - inhalative, short-term - local	7,717 mg/m ³	0,406
PROC5, PROC9, PROC13, PROC14	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC5, PROC9, PROC13, PROC14	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC6, PROC8a	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC6, PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC7	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,234 mg/m ³	0,761
PROC7	ECETOC TRA modified version		Worker - inhalative, short-term - local	14,469 mg/m ³	0,762
PROC8b	ECETOC TRA modified version		Worker - inhalative, long-term - local	2,864 mg/m ³	0,305
PROC8b	ECETOC TRA		Worker -	5,788 mg/m ³	0,305

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	modified version		inhalative, short-term - local		
PROC10	ECETOC TRA modified version		Worker - inhalative, long- term - local	4,823 mg/m ³	0,508
PROC10	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC15	ECETOC TRA modified version		Worker - inhalative, long- term - local	1,929 mg/m ³	0,203
PROC15	ECETOC TRA modified version		Worker - inhalative, short-term - local	3,858 mg/m ³	0,203
PROC19	ECETOC TRA modified version		Worker - inhalative, long- term - local	2,41 mg/m ³	0,254
PROC19	ECETOC TRA modified version		Worker - inhalative, short-term - local	4,823 mg/m ³	0,254

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

1. Short title of Exposure Scenario: Use as processing aid

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental release category	: ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8d, ERC8f, ERC10a, ERC11a

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2.2 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

2.3 Contributing scenario controlling worker exposure for: PROC2

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC3

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.5 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 40 %.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.6 Contributing scenario controlling worker exposure for: PROC5

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.7 Contributing scenario controlling worker exposure for: PROC8a

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.8 Contributing scenario controlling worker exposure for: PROC8b

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 90 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.9 Contributing scenario controlling worker exposure for: PROC9, PROC13

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

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Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.10 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 25 %.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE.: Wear a full face respirator conforming to EN140 with Type A filter or better. (Effectiveness: 95 %)

2.11 Contributing scenario controlling worker exposure for: PROC11

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Two hands and forearms (1500 cm²)

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Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear a full face respirator conforming to EN140 with Type A filter or better. (Effectiveness: 95 %)Wear suitable gloves tested to EN374.Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.12 Contributing scenario controlling worker exposure for: PROC14

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 20%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374.Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.13 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

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Human factors not influenced by risk management

Exposed skin area : Palm of one hand (240 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.14 Contributing scenario controlling worker exposure for: PROC19

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2.5%

Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands and forearms (1980 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC1	ECETOC TRA modified version		Worker - inhalative, long-term - local	0,019 mg/m³	0,002
PROC1	ECETOC TRA modified version		Worker - inhalative, short-term -	0,039 mg/m³	0,002

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			local		
PROC2	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC2	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC3	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC3	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC4	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC4	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC5	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC5	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC8a	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC8a	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC8b	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC8b	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC9, PROC13	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC9, PROC13	ECETOC TRA modified version		Worker - inhalative,	15,433 mg/m ³	0,812

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			short-term - local		
PROC10	ECETOC TRA modified version		Worker - inhalative, long-term - local	2,411 mg/m ³	0,254
PROC10	ECETOC TRA modified version		Worker - inhalative, short-term - local	4,823 mg/m ³	0,254
PROC11	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC11	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC14	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC14	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC15	ECETOC TRA modified version		Worker - inhalative, long-term - local	3,858 mg/m ³	0,406
PROC15	ECETOC TRA modified version		Worker - inhalative, short-term - local	7,717 mg/m ³	0,406
PROC19	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC19	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

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4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

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1. Short title of Exposure Scenario: Use as processing aid

Main User Groups	: SU 21: Consumer uses: Private households (= general public = consumers)
Product category	: PC23: Leather tanning, dye, finishing, impregnation and care products PC32: Polymer preparations and compounds PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids
Environmental release category	: ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

2.1 Contributing scenario controlling environmental exposure for: ERC8c, ERC8d, ERC8f, ERC10a, ERC11a

2.3 Contributing scenario controlling consumer exposure for: PC23, PC34

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 2%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Amount used

Applied amount	: 0,75 g/s
Uptake fraction	: 100 %

Frequency and duration of use

Exposure duration	: 240 min
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Frequency of use : 2 days/week
Application duration : 3 min

Human factors not influenced by risk management

Body weight : 65 kg
Breathing volume : 1,446 m³/h

Other given operational conditions affecting consumers exposure

Room size : 58 m³
Ventilation rate per hour : 0,5

2.4 Contributing scenario controlling consumer exposure for: PC32

Product characteristics

Concentration of the Substance in Mixture/Article : Covers percentage substance in the product up to 2%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Amount used

Applied amount : 0,025 l
Uptake fraction : 100 %

Frequency and duration of use

Exposure duration : 240 min
Frequency of use : 104 days/year
Application duration : 20 min

Human factors not influenced by risk management

Body weight : 65 kg
Breathing volume : 34,7 m³/day

Other given operational conditions affecting consumers exposure

Room size : 58 m³
Ventilation rate per hour : 0,5

3. Exposure estimation and reference to its source

Consumers

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Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PC23 PC34	Consexpo		Acute inhalation local exposure	0,04 mg/m ³	0,0004
PC23 PC34	Consexpo		Chronic inhalation local exposure	0,09 mg/m ³	0,005
PC32	Consexpo		Acute inhalation local exposure	0,6 mg/m ³	0,063
PC32	Consexpo		Chronic inhalation local exposure	3,7 mg/m ³	0,195

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1., .

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

All relevant information on the safe consumer use has been outlined in the section 2., If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required., www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp

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1. Short title of Exposure Scenario: Animal nutrition

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available
Environmental release category	: ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b

2.2 Contributing scenario controlling worker exposure for: PROC5

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration	: > 480 min
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Human factors not influenced by risk management

Exposed skin area	: Palms of both hands (480 cm ²)
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Other operational conditions affecting workers exposure

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Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.3 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better. (Effectiveness: 95 %)

2.4 Contributing scenario controlling worker exposure for: PROC11

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 10%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

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Human factors not influenced by risk management

Exposed skin area : Two hands and forearms (1500 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.5 Contributing scenario controlling worker exposure for: PROC13

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.6 Contributing scenario controlling worker exposure for: PROC19

Product characteristics

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Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands and forearms (1980 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Outdoor

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC5	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC5	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC10	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC10	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC11	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC11	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC13	ECETOC TRA modified version		Worker - inhalative, long-	7,717 mg/m ³	0,812

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			term - local		
PROC13	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC19	ECETOC TRA modified version		Worker - inhalative, long-term - local	6,752 mg/m ³	0,711
PROC19	ECETOC TRA modified version		Worker - inhalative, short-term - local	13,504 mg/m ³	0,711

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.

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1. Short title of Exposure Scenario: Use as preserving agent

Main User Groups	: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category	: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available
Environmental release category	: ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8b: Wide dispersive indoor use of reactive substances in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b

2.2 Contributing scenario controlling worker exposure for: PROC5

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 20 % (unless stated differently).
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration	: > 480 min
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Human factors not influenced by risk management

Exposed skin area	: Palms of both hands (480 cm ²)
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Other operational conditions affecting workers exposure

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Ref. 2.7/REG_EU/EN

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Revision Date: 09.11.2018

Previous date: 07.12.2017

Print Date:16.07.2019

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 80 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.3 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands (960 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better. (Effectiveness: 95 %)

2.4 Contributing scenario controlling worker exposure for: PROC11

Product characteristics

Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 10%.
Physical Form (at time of use)	: Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

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Human factors not influenced by risk management

Exposed skin area : Two hands and forearms (1500 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.5 Contributing scenario controlling worker exposure for: PROC13

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 80%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Local exhaust ventilation (Effectiveness: 95 %)

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin. If above technical/organisational control measures are not feasible, then adopt following PPE:., Wear a full face respirator conforming to EN140 with Type A filter or better.
(Effectiveness: 95 %)

2.6 Contributing scenario controlling worker exposure for: PROC19

Product characteristics

FennoSpec 7810

Ref. 2.7/REG_EU/EN

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

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Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 5%.
Physical Form (at time of use) : Liquid, vapour pressure 0.5 - 10 kPa

Frequency and duration of use

Exposure duration : > 480 min

Human factors not influenced by risk management

Exposed skin area : Both hands and forearms (1980 cm²)

Other operational conditions affecting workers exposure

Outdoor / Indoor : Outdoor

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

Wear suitable gloves tested to EN374. Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterisation ratio (PEC/PNEC):
PROC5	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC5	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC10	ECETOC TRA modified version		Worker - inhalative, long-term - local	7,717 mg/m ³	0,812
PROC10	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC11	ECETOC TRA modified version		Worker - inhalative, long-term - local	4,823 mg/m ³	0,508
PROC11	ECETOC TRA modified version		Worker - inhalative, short-term - local	9,646 mg/m ³	0,508
PROC13	ECETOC TRA modified version		Worker - inhalative, long-	7,717 mg/m ³	0,812

FennoSpec 7810

Ref. 2.7/REG_EU/EN

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			term - local		
PROC13	ECETOC TRA modified version		Worker - inhalative, short-term - local	15,433 mg/m ³	0,812
PROC19	ECETOC TRA modified version		Worker - inhalative, long-term - local	6,752 mg/m ³	0,711
PROC19	ECETOC TRA modified version		Worker - inhalative, short-term - local	13,504 mg/m ³	0,711

Environmental exposure assessment for this scenario is not relevant., This substance is corrosive. For the handling of corrosive substances and formulations, immediate dermal contacts occur only occasionally and it is assumed that repeated daily dermal exposure can be neglected. Therefore, dermal exposure to this substance was not quantified., The concentration of the substance has been considered using a linear approach., When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by 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., For scaling see: <http://www.ecetoc.org/tra>, If scaling reveals a condition of unsafe use (i.e. RCRs>1), additional RMMs or a site-specific chemical safety assessment is required.