

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

METHANOL / DR 160 KG

Version 5.0

Print Date 20.11.2019

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Trade name : METHANOL / DR 160 KG
Substance name : methanol
Index-No. : 603-001-00-X
CAS-No. : 67-56-1
EC-No. : 200-659-6
EU REACH-Reg. No. : 01-2119433307-44-xxxx

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

Use of the Substance/Mixture : Used as:, Solvent, Chemical industry in general, Identified use: See table in front of appendix for a complete overview of identified uses.
Uses advised against : At this moment we have not identified any uses advised against

1.3. Details of the supplier of the safety data sheet

Company : Brenntag Nordic AB
Koksgatan 18
SE 20211 Malmoe
Telephone : +46 (0)40-28 73 00
Telefax : +46 (0)40-93 7015
E-mail address : SDS.SE@brenntag-nordic.com
Responsible/issuing person : Environment & Quality

1.4. Emergency telephone number

Emergency telephone number : In case of personal injury call:
Denmark: 82 12 12 12 Giftlinien, Bispebjerg Hospital
Finland: Poison Information Centre: (09) 471 977 (direct) or (09) 47 11 (exchange), open 24h/day
Norway: 22 59 13 00 Giftinformasjonen (døgnåpent)
Sweden: +46-8-331231 Giftinformationscentralen (24 hour service)
Outside these countries: Please call your local emergency services

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture**

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METHANOL / DR 160 KG**Classification according to Regulation (EC) No 1272/2008**

REGULATION (EC) No 1272/2008			
Hazard class	Hazard category	Target Organs	Hazard statements
Flammable liquids	Category 2	---	H225
Acute toxicity (Inhalation)	Category 3	---	H331
Acute toxicity (Dermal)	Category 3	---	H311
Acute toxicity (Oral)	Category 3	---	H301
Specific target organ toxicity - single exposure	Category 1	---	H370




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

Most important adverse effects

- Human Health : Inhalation may cause the following effects:, Toxic if inhaled., Inhalation may cause headache, dizziness, tiredness and nausea. After many hours without problems vomiting, gastric pain, difficulty to see, difficulty to breathing and unconsciousness may occur at inhalation of high concentrations.
Skin contact may cause the following effects:, Toxic in contact with skin., Decreases the skin which may cause dry and rough. Prolonged or repeated skin contact may result in dermatitis., Penetrates through the skin and may cause same symptom as at inhalation.
Eye contact may cause the following effects:, Splashes in eyes may cause strong pain. Vapour acts irritant.
Ingestion may cause the following effects:, Toxic if swallowed., May cause dizziness and nausea., After many hours without problems headache, vomiting, gastric pain, vision disturbances, breathing difficulties, unconsciousness and shock may occur., Risk for life-threatening poisoning and blindness, even if only small amounts have been swallowed.
- Physical and chemical hazards : Highly flammable liquid and vapour., Vapours are heavier than air and may spread along floors., Vapours may form explosive mixtures with air., In case of fire hazardous decomposition products may be produced such as:, Carbon oxides, Formaldehyde
- Potential environmental effects : According to available data, this product is not harmful to the environment.

2.2. Label elements**Labelling according to Regulation (EC) No 1272/2008**

METHANOL / DR 160 KG

Hazard symbols	:	  
Signal word	:	Danger
Hazard statements	:	H225 Highly flammable liquid and vapour. H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled. H370 Causes damage to organs (Eyes, Central nervous system).
Precautionary statements		
Prevention	:	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P280 Wear protective gloves/ eye protection/ face protection.
Response	:	P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth. P308 + P311 IF exposed or concerned: Call a POISON CENTER/doctor. P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage	:	P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Hazardous components which must be listed on the label:

- methanol

2.3. Other hazards

For Results of PBT and vPvB assessment see section 12.5.

SECTION 3: Composition/information on ingredients
3.1. Substances

Chemical nature : Substance

	Classification (REGULATION (EC) No 1272/2008)
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METHANOL / DR 160 KG

Hazardous components	Amount [%]	Hazard class / Hazard category	Hazard statements
methanol			
Index-No. : 603-001-00-X	>= 90 - <= 100	Flam. Liq.2	H225
CAS-No. : 67-56-1		Acute Tox.3	H331
EC-No. : 200-659-6		Acute Tox.3	H311
EU REACH- : 01-2119433307-44-xxxx		Acute Tox.3	H301
Reg. No.		STOT SE1	H370

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

SECTION 4: First aid measures
4.1. Description of first aid measures

General advice	: Remove from exposure, lie down. Take off all contaminated clothing immediately.
If inhaled	: Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. Oxygen, if needed. No artificial respiration, mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus. Call a physician immediately.
In case of skin contact	: Wash off immediately with soap and plenty of water. Call a physician immediately.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 5 minutes. If eye irritation persists, consult a specialist.
If swallowed	: Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Keep patient warm and at rest. If a person vomits when lying on his back, place him in the recovery position. Call a physician immediately.
Protection of First Aid Responders	: First Aid responders should pay attention to self-protection and use the recommended protective clothing.

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

Symptoms	: Effects of breathing high concentrations of vapour may include: respiratory tract irritation, Ingestion may provoke the following symptoms: Gastrointestinal discomfort, Nausea, Vomiting, Stomach pain, Headache, giddiness, See Section 11 for more detailed information on health effects and symptoms.
Effects	: Risk of blindness! Danger by skin absorption. See Section 11 for more detailed information on health effects and symptoms.

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

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Treatment : Administer approx. 100 ml ethanol 40 % (hard liquor). Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
 Unsuitable extinguishing media : High volume water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting : Highly flammable, The vapour may be invisible, heavier than air and spread along ground, Vapours may form explosive mixtures with air. Flash back possible over considerable distance.
 Hazardous combustion products : Carbon oxides

5.3. Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Wear appropriate body protection (full protective suit)
 Specific extinguishing methods : Control smoke with water spray.
 Further advice : Cool closed containers exposed to fire with water spray. Heating will cause a pressure rise - with risk of bursting. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions : Keep people away from and upwind of spill/leak. Use personal protective equipment. Avoid contact with the skin and the eyes. Do not breathe vapours or spray mist. Wear respiratory protection.

6.2. Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. If the product contaminates rivers and lakes or drains inform respective authorities. If material reaches soil inform authorities responsible for such cases.

6.3. Methods and materials for containment and cleaning up

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Methods and materials for containment and cleaning up : Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders). Keep in suitable, closed containers for disposal.

Further information : Treat recovered material as described in the section "Disposal considerations".

6.4. Reference to other sections

See Section 1 for emergency contact information.

See Section 8 for information on personal protective equipment.

See Section 13 for waste treatment information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling : Keep container tightly closed. Use personal protective equipment. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Use respirator with appropriate filter if vapours or aerosol are released. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.

Hygiene measures : Keep away from food, drink and animal feedingstuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately. Keep working clothes separately.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container. Keep locked up or in an area accessible only to qualified or authorised persons. Suitable materials for containers: Stainless steel; Unsuitable materials for containers: Aluminium; Lead; Zinc; polystyrene

Advice on protection against fire and explosion : Combustible liquid. Keep away from sources of ignition - No smoking. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Take measures to prevent the build up of electrostatic charge. Use only in an area containing explosion proof equipment.

Further information on storage conditions : Keep tightly closed in a dry and cool place. Keep in a well-ventilated place.

Advice on common storage : Keep away from food, drink and animal feedingstuffs. Do not store together with oxidizing and self-igniting products.

7.3. Specific end use(s)

Specific use(s) : Identified use: See table in front of appendix for a complete overview of identified uses.

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SECTION 8: Exposure controls/personal protection
8.1. Control parameters

Component:	methanol	CAS-No. 67-56-1
Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)		

DNEL	Workers, Acute - systemic effects, Skin contact	: 40 mg/kg bw/day
DNEL	Workers, Acute - systemic effects, Inhalation	: 260 mg/m ³
DNEL	Workers, Acute - local effects, Inhalation	: 260 mg/m ³
DNEL	Workers, Long-term - systemic effects, Skin contact	: 40 mg/kg bw/day
DNEL	Workers, Long-term - systemic effects, Inhalation	: 260 mg/m ³
DNEL	Workers, Long-term - local effects, Inhalation	: 260 mg/m ³
DNEL	Consumers, Acute - systemic effects, Skin contact	: 8 mg/kg bw/day
DNEL	Consumers, Acute - systemic effects, Inhalation	: 50 mg/m ³
DNEL	Consumers, Acute - systemic effects, Ingestion	: 8 mg/kg bw/day
DNEL	Consumers, Long-term - local effects, Inhalation	: 50 mg/m ³
DNEL	Consumers, Long-term - systemic effects, Ingestion	: 8 mg/kg bw/day
DNEL	Consumers, Long-term - systemic effects, Inhalation	: 50 mg/m ³
DNEL	Consumers, Long-term - systemic effects, Skin contact	: 8 mg/kg bw/day
DNEL	Consumers, Acute - local effects, Inhalation	: 50 mg/m ³

METHANOL / DR 160 KG**Predicted No Effect Concentration (PNEC)**

Fresh water	:	154 mg/l
Marine water	:	15,4 mg/l
Sediment	:	570,4 mg/kg dry weight (d.w.)
Soil	:	23,5 mg/kg ww
Sewage treatment plant (STP)	:	100 mg/l
Intermittent releases	:	1540 mg/l

Other Occupational Exposure Limit Values

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU, 2017/164/EU, Time Weighted Average (TWA):

200 ppm, 260 mg/m³

Indicative

Sweden. OEL, Short Term Exposure Limit (STEL):

250 ppm, 350 mg/m³

Sweden. OEL, Time Weighted Average (TWA):

200 ppm, 250 mg/m³

Sweden. OEL, Skin designation:

Can be absorbed through the skin.

8.2. Exposure controls**Appropriate engineering controls**

Refer to protective measures listed in sections 7 and 8.

Personal protective equipment*Respiratory protection*

Advice : In case of brief exposure or low pollution use breathing filter apparatus.
Respiratory protection complying with EN 141.
Recommended Filter type:AX
In case of intensive or longer exposure use self-contained breathing apparatus.

Hand protection

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Advice : Protective gloves complying with EN 374.
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.
Protective gloves should be replaced at first signs of wear.

Material : butyl-rubber
Break through time : ≥ 8 h
Glove thickness : 0,5 mm

Material : Fluorinated rubber
Break through time : ≥ 4 h
Glove thickness : 0,4 mm

Material : polychloroprene
Break through time : ≥ 1 h
Glove thickness : 0,5 mm

Eye protection

Advice : Goggles giving complete protection to the eyes

Skin and body protection

Advice : Solvent resistant protective clothing

Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system.
Avoid subsoil penetration.
If the product contaminates rivers and lakes or drains inform respective authorities.
If material reaches soil inform authorities responsible for such cases.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Form : liquid
Colour : colourless
Odour : alcohol-like
Odour Threshold : no data available

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pH	:	not determined
Freezing point/range	:	ca. -98 °C
Boiling point/boiling range	:	64,7 °C
Flash point	:	9 - 12 °C
Evaporation rate	:	5,3 (ether = 1) 2,1 (Butyl Acetate = 1)
Flammability (solid, gas)	:	Not applicable
Upper explosion limit	:	44 %(V)
Lower explosion limit	:	5,5 %(V)
Vapour pressure	:	128 hPa (20 °C)
Relative vapour density	:	1,1 (20 °C)
Density	:	0,79 g/cm ³ (20 °C)
Water solubility	:	completely miscible
Solubility/qualitative	:	miscible with most organic solvents
Partition coefficient: n-octanol/water	:	log Kow -0,77
Auto-ignition temperature	:	> 455 °C
Thermal decomposition	:	no data available
Viscosity, dynamic	:	0,544 - 0,59 mPa.s (25 °C)
Viscosity, kinematic	:	no data available
Explosive properties	:	EU legislation: Formation of explosive air/vapour mixtures is possible.
Explosivity	:	Product is not explosive.
Oxidizing properties	:	not oxidising

9.2. Other information

No further information available.

SECTION 10: Stability and reactivity**10.1. Reactivity**

Advice : No decomposition if stored and applied as directed.

METHANOL / DR 160 KG**10.2. Chemical stability**

Advice : Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.

10.4. Conditions to avoid

Conditions to avoid : Heat, flames and sparks.
Thermal decomposition : no data available

10.5. Incompatible materials

Materials to avoid : Keep away from strong oxidizing agents and strong reducing agents. Aluminium, Lead, Magnesium, Alkali metals

10.6. Hazardous decomposition products

Hazardous decomposition products : In case of fire hazardous decomposition products may be produced such as: Carbon oxides, Formaldehyde

SECTION 11: Toxicological information**11.1. Information on toxicological effects****Data for the product****Acute toxicity****Oral**

Toxic if swallowed.,May cause dizziness and nausea.,After many hours without problems headache, vomiting, gastric pain, vision disturbances, breathing difficulties, unconsciousness and shock may occur.,Risk for life-threatening poisoning and blindness, even if only small amounts have been swallowed.

Inhalation

Toxic if inhaled.
Inhalation may cause headache, dizziness, tiredness and nausea. After many hours without problems vomiting, gastric pain, difficulty to see, difficulty to breathing and unconsciousness may occur at inhalation of high concentrations.

Irritation**Skin**

Result : Toxic in contact with skin.
Decreases the skin which may cause dry and rough. Prolonged or repeated skin contact may result in dermatitis.

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Penetrates through the skin and may cause same symptom as at inhalation.

Eyes

Result : Splashes in eyes may cause strong pain. Vapour acts irritant.

Component: methanol CAS-No. 67-56-1

Acute toxicity
Oral

Toxic if swallowed.

Dermal

Toxic in contact with skin.

Irritation
Skin

Result : No skin irritation (Rabbit) (BASF - Test)

Eyes

Result : No eye irritation (Rabbit) (OECD - Guideline 405)

Sensitisation

Result : not sensitizing (Maximisation Test; Guinea pig) (OECD Test Guideline 406)

CMR effects
CMR Properties

Carcinogenicity : Animal testing did not show any carcinogenic effects.
 Mutagenicity : In vitro tests did not show mutagenic effects
 In vivo tests did not show mutagenic effects
 Teratogenicity : Not classified due to data which are conclusive although insufficient
 Reproductive toxicity : Not classified due to data which are conclusive although insufficient

Specific Target Organ Toxicity
Single exposure

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Remarks : Target Organs: Eyes, Central nervous system
Causes damage to organs. Experience with human exposure

Repeated exposure

Remarks : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Other toxic properties

Aspiration hazard

No aspiration toxicity classification,

Further information

Other relevant toxicity information : Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Danger by skin absorption.
Effects due to ingestion may include:
Risk of blindness!
Vomiting
Nausea
Coma

SECTION 12: Ecological information
12.1. Toxicity

Component:	methanol	CAS-No. 67-56-1
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Acute toxicity

Fish

LC50 : 15400 mg/l (Lepomis macrochirus; 96 h) (flow-through test; EPA 600/3-75/009)

Toxicity to daphnia and other aquatic invertebrates

EC50 : > 1000 mg/l (Daphnia magna (Water flea); 48 h) (OECD Test Guideline 202)

algae

EC50 : 22000 mg/l (Pseudokirchneriella subcapitata (green algae); 96 h)

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Bacteria

EC50 : 20000 mg/l (Bacteria; 15 h)
 IC50 : 1000 mg/l (Bacteria; 24 h)
 IC50 : > 1000 mg/l (activated sludge; 3 h)

12.2. Persistence and degradability

Component:	methanol	CAS-No. 67-56-1
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Persistence and degradability
Persistence

Result : study scientifically unjustified

Biodegradability

Result : 97 % (Marine water; Exposure Time: 20 d) Readily biodegradable.
 Result : 95 % (Fresh water; Exposure Time: 20 d)
 Result : 83 - 91 % (Fresh water sediment; Exposure Time: 3 d)
 Result : 71,5 % (Fresh water; Exposure Time: 5 d)
 Result : 69 % (Marine water; Exposure Time: 5 d)
 Result : 46,3 - 53,5 % (Soil; Exposure Time: 5 d)

12.3. Bioaccumulative potential

Component:	methanol	CAS-No. 67-56-1
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Bioaccumulation

Result : log Kow -0,77
 : BCF: < 10 The product has low potential bioaccumulation.

12.4. Mobility in soil

Component:	methanol	CAS-No. 67-56-1
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Mobility

: The product is mobile in water environment.

12.5. Results of PBT and vPvB assessment

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Component:	methanol	CAS-No. 67-56-1
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Results of PBT and vPvB assessment

Result : This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)., This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6. Other adverse effects

Component:	methanol	CAS-No. 67-56-1
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Additional ecological information

Result : Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration. Danger to drinking water if even extremely small quantities leak into soil.

SECTION 13: Disposal considerations
13.1. Waste treatment methods

Product : Eliminate waste in conditions authorized by the regulations. Store waste in containers provided for this purpose. Do not dump in drains, water sheets or the ground.

Contaminated packaging : Empty remaining contents. Packagings that cannot be cleaned are to be disposed of in the same manner as the product. Dispose of in accordance with local regulations.

European Waste Catalogue Number : No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

SECTION 14: Transport information
14.1. UN number

1230

14.2. UN proper shipping name

ADR : METHANOL
RID : METHANOL
IMDG : METHANOL

14.3. Transport hazard class(es)

ADR-Class : 3
 (Labels; Classification Code; Hazard identification No; Tunnel restriction code) 3, 6.1; FT1; 336; (D/E)

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RID-Class (Labels; Classification Code; Hazard identification No)	: 3 3, 6.1; FT1; 336
IMDG-Class (Labels; EmS)	: 3 3, 6.1; F-E, S-D

14.4. Packaging group

ADR	: II
RID	: II
IMDG	: II

14.5. Environmental hazards

Environmentally hazardous according to ADR	: no
Environmentally hazardous according to RID	: no
Marine Pollutant according to IMDG-Code	: no

14.6. Special precautions for user

Not applicable.

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

IMDG	: Not applicable.
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SECTION 15: Regulatory information

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

Data for the product

EU. REACH, Annex XVII, Marketing and Use Restrictions (Regulation 1907/2006/EC)	: Point Nos.: , 3; Listed
	Point Nos.: , 40; Listed
Other regulations	: Pregnant and nursing women may not be exposed to the product. Take in consideration the national regulation. Exposure limits in accordance to local regulations
Nordic Combustible liquids danger class	: Fire class 1 :Flashpoint < 21°C
Other regulations	: Only persons, who are thoroughly instructed in the dangerous properties and the necessary safety precautions of the substance, are allowed to work with it.
	In accordance to national regulations about "handling of liquids with flaspoint below 100°C".

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Component:	methanol	CAS-No. 67-56-1
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EU. Regulation EU No. 649/2012 concerning the export and import of dangerous chemicals : ; The substance/mixture does not fall under this legislation.

EU. REACH, Annex XVII, Marketing and Use Restrictions (Regulation 1907/2006/EC) : Point Nos.: , 3; Listed

Point Nos.: , 40; Listed

EU. Regulation No. 1223/2009 on cosmetic products, Annex III: List of Restricted Substances in Cosmetic Products : Maximum concentration in ready for use preparation: 5 %; Denaturant for ethanol and isopropyl alcohol; See the text of the regulation for applicable exceptions or provisions.

EU. Directive 2012/18/EU (SEVESO III) Annex I : Lower-tier requirements: 500 tonnes; Part 2: Named dangerous substances

Upper-tier requirements: 5.000 tonnes; Part 2: Named dangerous substances

Notification status**methanol:**

Regulatory List	Notification	Notification number
AICS	YES	
DSL	YES	
EINECS	YES	200-659-6
ENCS (JP)	YES	(2)-201
IECSC	YES	
ISHL (JP)	YES	(2)-201
JEX (JP)	YES	(2)-201
KECI (KR)	YES	97-1-80
KECI (KR)	YES	KE-23193
NZIOC	YES	HSR001186
PICCS (PH)	YES	
TSCA	YES	

15.2. Chemical safety assessment

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

METHANOL / DR 160 KG
SECTION 16: Other information
Full text of H-Statements referred to under sections 2 and 3.

H225	Highly flammable liquid and vapour.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H370	Causes damage to organs.

Abbreviations and Acronyms

BCF	bioconcentration factor
BOD	biochemical oxygen demand
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
CMR	carcinogenic, mutagenic or toxic to reproduction
COD	chemical oxygen demand
DNEL	derived no-effect level
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
LC50	median lethal concentration
LOAEC	lowest observed adverse effect concentration
LOAEL	lowest observed adverse effect level
LOEL	lowest observed effect level
NLP	no-longer polymer
NOAEC	no observed adverse effect concentration
NOAEL	no observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
OECD	Organisation for Economic Cooperation and Development
OEL	occupational exposure limit
PBT	persistent, bioaccumulative and toxic
REACH Auth. No.:	REACH Authorisation Number
REACH AuthAppC. No.	REACH Authorisation Application Consultation Number
PNEC	predicted no-effect concentration
STOT	specific target organ toxicity
SVHC	substance of very high concern

Further information

Key literature references : Supplier information and data from the "Database of registered

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and sources for data		substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet.
Methods used for product classification	:	The classification for human health, physical and chemical hazards and environmental hazards were derived from a combination of calculation methods and if available test data.
Hints for trainings	:	The workers have to be trained regularly on the safe handling of the products based on the information provided in the Safety Data Sheet and the local conditions of the workplace. National regulations for the training of workers in the handling of hazardous materials must be adhered to.
Other information	:	<p>The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship.</p> <p>The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.</p>

|| Indicates updated section.

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No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Use as an intermediate	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	6a, 6b	NA	ES1746
2	Distribution of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9	1, 2	NA	ES1749
3	Formulation & (re)packing of substances and mixtures	3	10	NA	1, 2, 3, 4, 8a, 8b, 9, 15	2	NA	ES1796
4	Use in cleaning agents	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 10, 13	4	NA	ES1798
5	Use in cleaning agents	22	NA	NA	1, 2, 3, 4, 8a, 8b, 10, 11, 13	8a, 8d	NA	ES1801
6	Use in fuel	3	10	NA	1, 2, 3, 8a, 8b, 16	7	NA	ES1803
7	Use in fuel	22	NA	NA	1, 2, 3, 8a, 8b, 16	8b, 8e, 9a, 9b	NA	ES1806
8	Use in laboratories	3	NA	NA	10, 15	4	NA	ES1813
9	Use in laboratories	22	NA	NA	10, 15	8a	NA	ES1827
10	Use as water treatment chemicals	3	NA	NA	2	4, 6b	NA	ES2315

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1. Short title of Exposure Scenario 1: Use as an intermediate

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids
Activity	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

2.1 Contributing scenario controlling environmental exposure for: ERC6a, ERC6b

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems With sample collection with occasional controlled exposure	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC2)
	General exposures Closed systems Use in contained batch processes	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC3)
	General exposures Open systems Batch process With sample collection	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC4)
	Process sampling	Provide extraction ventilation at points where emissions occur.(PROC2, PROC3, PROC4, PROC8a, PROC8b)

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	Laboratory activities	Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC15)
	Bulk transfers	Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC8a)
	Bulk transfers	Ensure material transfers are under containment or extract ventilation. (Efficiency: 97 %)(PROC8b)
	Storage with occasional controlled exposure	Provide extraction ventilation at points where emissions occur.(PROC2)

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC3, PROC15	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC1	---	Worker - inhalative, long-term - systemic	0,01mg/m ³	0,00004
PROC1	---	Worker - inhalative, short-term - systemic	0,05mg/m ³	0,0002
PROC2	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC2, PROC15	---	Worker - inhalative, long-term - systemic	6,67mg/m ³	0,026
PROC2, PROC15	---	Worker - inhalative, short-term - systemic	26,67mg/m ³	0,103
PROC3, PROC4	---	Worker - inhalative, long-term - systemic	13,33mg/m ³	0,051
PROC3, PROC4	---	Worker - inhalative, short-term - systemic	53,33mg/m ³	0,205
PROC4, PROC8b	---	worker dermal, short and long term - systemic	6,86mg/kg bw/day	0,171
PROC8a	---	worker dermal, short and long term - systemic	13,71mg/kg bw/day	0,343
PROC8a	---	Worker - inhalative, long-term - systemic	33,33mg/m ³	0,128
PROC8a	---	Worker - inhalative, short-term - systemic	66,67mg/m ³	0,256
PROC8b	---	Worker - inhalative, long-term - systemic	6,00mg/m ³	0,023
PROC8b	---	Worker - inhalative, short-term - systemic	12,00mg/m ³	0,046

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

Environment

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Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 2: Distribution of substance

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition 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 PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	ERC1: Manufacture of substances ERC2: Formulation of preparations
Activity	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	One hand, face side only. 240 cm ² (PROC1, PROC3)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
	Exposed skin area	Two hands face side only. 480 cm ² (PROC2, PROC4, PROC8b, PROC9)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems With sample collection with occasional controlled exposure	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2)
	General exposures Closed systems Use in contained batch processes	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC3)
	General exposures Open systems	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC4)

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	Batch process With sample collection	
	Bulk transfers Open systems	Clear transfer lines prior to de-coupling. Ensure material transfers are under containment or extract ventilation. (Efficiency: 97 %)(PROC8b)
	Bulk transfers	Clear transfer lines prior to de-coupling. Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC8a)
	Drum and small package filling	Put lids on containers immediately after use. Clear spills immediately. Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9)
	Storage with occasional controlled exposure	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN374.	

3. Exposure estimation and reference to its source
Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC3	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC1	---	Worker - inhalative, long-term - systemic	0,01mg/m3	0,00004
PROC1	---	Worker - inhalative, short-term - systemic	0,05mg/m3	0,0002
PROC2	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC2	---	Worker - inhalative, long-term - systemic	6,67mg/m3	0,026
PROC2	---	Worker - inhalative, short-term - systemic	26,67mg/m3	0,103
PROC3, PROC4	---	Worker - inhalative, long-term - systemic	13,33mg/m3	0,051
PROC3, PROC4	---	Worker - inhalative, short-term - systemic	53,33mg/m3	0,205
PROC4, PROC8b, PROC9	---	worker dermal, short and long term - systemic	6,86mg/kg bw/day	0,171
PROC8a	---	worker dermal, short and long term - systemic	13,71mg/kg bw/day	0,343
PROC8a	---	Worker - inhalative, long-term - systemic	33,33mg/m3	0,128
PROC8a	---	Worker - inhalative, short-term - systemic	66,67mg/m3	0,256

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PROC8b	---	Worker - inhalative, long-term - systemic	6,00mg/m ³	0,023
PROC8b	---	Worker - inhalative, short-term - systemic	12,00mg/m ³	0,046
PROC9	---	Worker - inhalative, long-term - systemic	26,67mg/m ³	0,103
PROC9	---	Worker - inhalative, short-term - systemic	53,34mg/m ³	0,205

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 3: Formulation & (re)packing of substances and mixtures

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	<p>PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC15: Use as laboratory reagent</p>
Environmental Release Categories	ERC2: Formulation of preparations
Activity	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC2

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	One hand, face side only. 240 cm ² (PROC1, PROC3, PROC15)
	Exposed skin area	Two hands face side only. 480 cm ² (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems With sample collection with occasional controlled exposure	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2)
	General exposures Closed systems Use in contained batch processes	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC3)

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	General exposures Open systems Batch process With sample collection with potential for aerosol generation	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC4)
	Process sampling	Avoid dip sampling. Provide extract ventilation to points where emissions occur.(PROC2, PROC3, PROC4, PROC8a, PROC8b)
	Laboratory activities	Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC15)
	Bulk transfers	Clear transfer lines prior to de-coupling. Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a)
	Bulk transfers	Clear lines prior to de-coupling. Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b)
	Drum and small package filling	Put lids on containers immediately after use. Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC9)
	Storage with occasional controlled exposure	Avoid dip sampling. Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN374.	

3. Exposure estimation and reference to its source
Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC3, PROC15	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,0008
PROC1	---	Worker - inhalative, long-term - systemic	0,01mg/m3	0,00004
PROC1	---	Worker - inhalative, short-term - systemic	0,05mg/m3	0,0002
PROC2	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC2, PROC15	---	Worker - inhalative, long-term - systemic	6,67mg/m3	0,026
PROC2	---	Worker - inhalative, short-term - systemic	26,67mg/m3	0,103
PROC3, PROC4	---	Worker - inhalative, long-term - systemic	13,33mg/m3	0,051
PROC3, PROC4	---	Worker - inhalative, short-term - systemic	53,33mg/m3	0,205

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PROC4, PROC8b, PROC9	---	worker dermal, short and long term - systemic	6,86mg/kg bw/day	0,171
PROC8a	---	worker dermal, short and long term - systemic	13,71mg/kg bw/day	0,343
PROC8a	---	Worker - inhalative, long-term - systemic	33,33mg/m3	0,128
PROC8a	---	Worker - inhalative, short-term - systemic	66,67mg/m3	0,256
PROC8b	---	Worker - inhalative, long-term - systemic	6,00mg/m3	0,023
PROC8b	---	Worker - inhalative, short-term - systemic	12,00mg/m3	0,046
PROC9	---	Worker - inhalative, long-term - systemic	26,67mg/m3	0,103
PROC9	---	Worker - inhalative, short-term - systemic	53,34mg/m3	0,205
PROC15	---	Worker - inhalative, short-term - systemic	13,33mg/m3	0,051

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 4: Use in cleaning agents

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	<p>PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC7: Industrial spraying</p> <p>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</p> <p>PROC10: Roller application or brushing</p> <p>PROC13: Treatment of articles by dipping and pouring</p>
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

2.1 Contributing scenario controlling environmental exposure for: ERC4

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	One hand, face side only. 240 cm ² (PROC1, PROC3)
	Exposed skin area	Two hands face side only. 480 cm ² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
	Room size	1000 m ³ (PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Automated process with (semi) closed systems Use in contained systems	Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC2)
	Use in contained batch processes	Provide the operation with a properly sited receiving hood. (Efficiency: 90 %)(PROC3, PROC4)
	Bulk transfers	Ensure material transfers are under containment or extract ventilation. (Efficiency: 90 %)(PROC8a)

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	Filling/ preparation of equipment from drums or containers. Dedicated facility	Ensure material transfers are under containment or extract ventilation. (Efficiency: 97 %)(PROC8b)
	Cleaning with high pressure washers	Carry out in a vented booth or extracted enclosure.(PROC7)
	Degreasing small objects in cleaning station	Provide the operation with a properly sited receiving hood. (Efficiency: 90 %)(PROC13)
Organisational measures to prevent /limit releases, dispersion and exposure	Cleaning with high pressure washers	Clean equipment and the work area every day. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure control measures are regularly inspected and maintained.(PROC7)

2.3 Contributing scenario controlling worker exposure for: PROC10

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 80%
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	Two hands 960 cm ² (PROC10)
Technical conditions and measures to control dispersion from source towards the worker	Cleaning with low-pressure washers	Provide the operation with a properly sited receiving hood. (Efficiency: 90 %)(PROC10)

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC7: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC3	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC1	---	Worker - inhalative, long-term - systemic	0,01mg/m ³	0,00004
PROC1	---	Worker - inhalative, short-term - systemic	0,05mg/m ³	0,0002
PROC2	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC2	---	Worker - inhalative, long-term - systemic	6,67mg/m ³	0,026
PROC2	---	Worker - inhalative, short-term - systemic	26,67mg/m ³	0,103
PROC3, PROC4	---	Worker - inhalative, long-term - systemic	13,33mg/m ³	0,051

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PROC3, PROC4	---	Worker - inhalative, short-term - systemic	53,33mg/m3	0,205
PROC4, PROC8b	---	worker dermal, short and long term - systemic	6,86mg/kg bw/day	0,171
PROC7	---	worker inhalation, acute and long term - systemic	141,1mg/m3	0,542
PROC8a, PROC13	---	worker dermal, short and long term - systemic	13,71mg/kg bw/day	0,343
PROC8a, PROC13	---	Worker - inhalative, long-term - systemic	33,33mg/m3	0,128
PROC8a, PROC13	---	Worker - inhalative, short-term - systemic	66,67mg/m3	0,256
PROC8b	---	Worker - inhalative, long-term - systemic	6,00mg/m3	0,023
PROC8b	---	Worker - inhalative, short-term - systemic	12,00mg/m3	0,046
PROC10	---	Worker - inhalative, short-term - systemic	53,33mg/m3	0,205
PROC10	---	worker dermal, short and long term - systemic	21,94mg/kg bw/day	0,549
PROC10	---	Worker - inhalative, long-term - systemic	26,67mg/m3	0,103

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 5: Use in cleaning agents

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	<p>PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</p> <p>PROC10: Roller application or brushing</p> <p>PROC11: Non industrial spraying</p> <p>PROC13: Treatment of articles by dipping and pouring</p>
Environmental Release Categories	<p>ERC8a: Wide dispersive indoor use of processing aids in open systems</p> <p>ERC8d: Wide dispersive outdoor use of processing aids in open systems</p>
Activity	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Amount used		5 L/min (PROC11)
Frequency and duration of use	Covers daily exposures up to 8 hours	
	Avoid carrying out operation for more than 4 hours.(PROC4)	
Human factors not influenced by risk management	Exposed skin area	One hand, face side only. 240 cm ² (PROC1, PROC3)
	Exposed skin area	Two hands face side only. 480 cm ² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin area	Two hands 960 cm ² (PROC8a, PROC10, PROC11)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
	Avoid carrying out operation for more than 4 hours.(PROC4)	
	Room size	1000 m ³ (PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Automated process with (semi) closed systems Use in contained systems	Provide the operation with a properly sited receiving hood. (Efficiency: 80 %)(PROC2)
	Automated process with (semi) closed systems Use in contained systems Drum/batch transfers	Provide the operation with a properly sited receiving hood. (Efficiency: 80 %)(PROC3)

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	Semi-automated process (e.g.: Semi-automatic application of floor care and maintenance products)	Provide the operation with a properly sited receiving hood. (Efficiency: 80 %)(PROC4)
	Filling/ preparation of equipment from drums or containers. Non-dedicated facility	Limit the substance content in the product to 5 %. or Ensure material transfers are under containment or extract ventilation.(PROC8a)
	Filling/ preparation of equipment from drums or containers. Dedicated facility	Limit the substance content in the product to 5 %. or Ensure material transfers are under containment or extract ventilation.(PROC8b)
	Cleaning with low-pressure washers Rolling, Brushing no spraying	Limit the substance content in the product to 5 %.(PROC10)
	Cleaning with high pressure washers Spraying	Use long handled tools where possible. Limit the substance content in the product to 3% Avoid carrying out operations for more than 200 min(PROC11)
	Dipping, immersion and pouring	Provide the operation with a properly sited receiving hood. (Efficiency: 80 %)(PROC13)
	Storage with occasional controlled exposure	Ensure material transfers are under containment or extract ventilation. (Efficiency: 80 %)(PROC2)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the direction of airflow is clearly away from the worker. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC11)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC11)	

3. Exposure estimation and reference to its source
Environment

No exposure assessment presented for the environment.

Workers

PROC11: RISKOFDERM V2.1

PROC11: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC3, PROC8b	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC1	---	Worker - inhalative, long-term - systemic	0,13mg/m3	0,0005
PROC1	---	Worker - inhalative, short-term - systemic	0,53mg/m3	0,002
PROC2	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC2	---	Worker - inhalative, long-	13,33mg/m3	0,051

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		term - systemic		
PROC2	---	Worker - inhalative, short-term - systemic	53,33mg/m3	0,205
PROC3	---	Worker - inhalative, long-term - systemic	26,67mg/m3	0,103
PROC3	---	Worker - inhalative, short-term - systemic	106,67mg/m3	0,440
PROC4	---	worker dermal, short and long term - systemic	6,86mg/kg bw/day	0,171
PROC4	---	Worker - inhalative, long-term - systemic	40,00mg/m3	0,154
PROC4	---	Worker - inhalative, short-term - systemic	160,00mg/m3	0,615
PROC8a	---	worker dermal, short and long term - systemic	0,68mg/kg bw/day	0,017
PROC8a, PROC10	---	Worker - inhalative, long-term - systemic	33,33mg/m3	0,128
PROC8a, PROC10	---	Worker - inhalative, short-term - systemic	66,67mg/m3	0,256
PROC8b	---	Worker - inhalative, long-term - systemic	16,67mg/m3	0,064
PROC8b	---	Worker - inhalative, short-term - systemic	33,34mg/m3	0,128
PROC10	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC11	---	worker inhalation, acute and long term - systemic	134,1mg/m3	0,516
PROC11	---	worker dermal, short and long term - systemic	7,24mg/kg bw/day	0,181
PROC13	---	worker dermal, short and long term - systemic	13,71mg/kg bw/day	0,343
PROC13	---	Worker - inhalative, long-term - systemic	66,67mg/m3	0,256
PROC13	---	Worker - inhalative, long-term - systemic	133,33mg/m3	0,513

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 6: Use in fuel

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process categories	<p>PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</p> <p>PROC16: Using material as fuel sources, limited exposure to unburned product to be expected</p>
Environmental Release Categories	ERC7: Industrial use of substances in closed systems
Activity	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

2.1 Contributing scenario controlling environmental exposure for: ERC7

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	One hand, face side only. 240 cm ² (PROC1, PROC3, PROC16)
	Exposed skin area	Two hands face side only. 480 cm ² (PROC2, PROC8b)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems with occasional controlled exposure	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2)
	General exposures Closed systems Batch process	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC3)
	Vessel and container cleaning	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a)
	Drum/batch transfers	Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b)
	Storage with occasional controlled exposure	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2)

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Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN374.
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3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC3, PROC16	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC1	---	Worker - inhalative, long-term - systemic	0,01mg/m3	0,00004
PROC1	---	Worker - inhalative, short-term - systemic	0,05mg/m3	0,0002
PROC2	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC2	---	Worker - inhalative, long-term - systemic	6,67mg/m3	0,026
PROC2	---	Worker - inhalative, short-term - systemic	26,67mg/m3	0,103
PROC3	---	Worker - inhalative, long-term - systemic	13,33mg/m3	0,051
PROC3	---	Worker - inhalative, short-term - systemic	53,33mg/m3	0,205
PROC8a	---	worker dermal, short and long term - systemic	13,71mg/kg bw/day	0,343
PROC8a, PROC16	---	Worker - inhalative, long-term - systemic	33,33mg/m3	0,128
PROC8a, PROC16	---	Worker - inhalative, short-term - systemic	66,67mg/m3	0,256
PROC8b	---	worker dermal, short and long term - systemic	6,86mg/kg bw/day	0,171
PROC8b	---	Worker - inhalative, long-term - systemic	6,00mg/m3	0,023
PROC8b	---	Worker - inhalative, short-term - systemic	12,00mg/m3	0,046

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

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Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 7: Use in fuel

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	<p>PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</p> <p>PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities</p> <p>PROC16: Using material as fuel sources, limited exposure to unburned product to be expected</p>
Environmental Release Categories	<p>ERC8b: Wide dispersive indoor use of reactive substances in open systems</p> <p>ERC8e: Wide dispersive outdoor use of reactive substances in open systems</p> <p>ERC9a: Wide dispersive indoor use of substances in closed systems</p> <p>ERC9b: Wide dispersive outdoor use of substances in closed systems</p>
Activity	Covers the use as a fuel (or fuel additive) and includes activities associated with its transfer, use, equipment maintenance and handling of waste.

2.1 Contributing scenario controlling environmental exposure for: ERC8b, ERC8e, ERC9a, ERC9b

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	One hand, face side only. 240 cm ² (PROC1, PROC3, PROC16)
	Exposed skin area	Two hands face side only. 480 cm ² (PROC2, PROC8b)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures Closed systems with occasional controlled exposure	Provide extract ventilation to points where emissions occur. (Efficiency: 80 %)(PROC2)
	General exposures (closed systems) Batch process	Provide extract ventilation to points where emissions occur. (Efficiency: 80 %)(PROC3)
	Bulk transfers	Use drum pumps. Avoid carrying out operation for more than 1 hour. alternatively Limit the substance content in the product to 5 %.(PROC8a, PROC8b)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN374.	

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3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC3, PROC8b, PROC16	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC1	---	Worker - inhalative, long-term - systemic	0,13mg/m ³	0,0005
PROC1	---	Worker - inhalative, short-term - systemic	0,53mg/m ³	0,002
PROC2	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC2	---	Worker - inhalative, long-term - systemic	13,33mg/m ³	0,051
PROC2	---	Worker - inhalative, short-term - systemic	53,33mg/m ³	0,205
PROC3	---	Worker - inhalative, long-term - systemic	26,67mg/m ³	0,103
PROC3	---	Worker - inhalative, short-term - systemic	106,67mg/m ³	0,440
PROC8a	---	worker dermal, short and long term - systemic	0,68mg/kg bw/day	0,017
PROC8a	---	Worker - inhalative, long-term - systemic	33,33mg/m ³	0,128
PROC8a	---	Worker - inhalative, short-term - systemic	66,67mg/m ³	0,256
PROC8b	---	Worker - inhalative, long-term - systemic	16,67mg/m ³	0,064
PROC8b	---	Worker - inhalative, short-term - systemic	33,34mg/m ³	0,128
PROC16	---	Worker - inhalative, long-term - systemic	66,67mg/m ³	0,256
PROC16	---	Worker - inhalative, short-term - systemic	133,34mg/m ³	0,513

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

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Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 8: Use in laboratories

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC10: Roller application or brushing PROC15: Use as laboratory reagent
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

2.1 Contributing scenario controlling environmental exposure for: ERC4

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC10, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 80%
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	Two hands 960 cm ² (PROC10)
	Exposed skin area	One hand, face side only. 240 cm ² (PROC15)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Cleaning Rolling, Brushing Vessel and container cleaning	Carefully pour from containers. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC10)
	Laboratory activities small scale	Handle in a fume cupboard or under extract ventilation. (Efficiency: 90 %)(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN374.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC10, PROC15: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC10	---	worker dermal, short and long term - systemic	21,94mg/kg bw/day	0,549
PROC10	---	Worker - inhalative, long-term - systemic	26,67mg/m ³	0,103
PROC10	---	Worker - inhalative, short-term - systemic	53,34mg/m ³	0,205
PROC15	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC15	---	Worker - inhalative, long-term - systemic	6,67mg/m ³	0,026

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PROC15	---	Worker - inhalative, short-term - systemic	13,33mg/m3	0,051
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4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**Environment**

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 9: Use in laboratories

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC10: Roller application or brushing PROC15: Use as laboratory reagent
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC10, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	Two hands 960 cm ² (PROC10)
	Exposed skin area	One hand, face side only. 240 cm ² (PROC15)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Cleaning Rolling, Brushing	Carefully pour from containers. Limit the substance content in the product to 5 %.(PROC10)
	Laboratory activities small scale	Handle in a fume cupboard or under extract ventilation. (Efficiency: 80 %)(PROC15)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN374.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC10, PROC15: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC10	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC10	---	Worker - inhalative, long-term - systemic	33,33mg/m ³	0,128
PROC10	---	Worker - inhalative, short-term - systemic	66,67mg/m ³	0,256
PROC15	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC15	---	Worker - inhalative, long-term - systemic	13,33mg/m ³	0,051
PROC15	---	Worker - inhalative,	26,67mg/m ³	0,103

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short-term - systemic

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

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 10: Use as water treatment chemicals

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC2: Use in closed, continuous process with occasional controlled exposure
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6b: Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6b

No exposure assessment presented for the environment

2.2 Contributing scenario controlling worker exposure for: PROC2

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours	
Human factors not influenced by risk management	Exposed skin area	Two hands face side only. 480 cm ²
Other operational conditions affecting workers exposure	Indoor use	
	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Drain or remove substance from equipment prior to break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Carefully pour from containers. Provide local exhaust ventilation (LEV). (Efficiency: 90 %)(PROC2)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable gloves tested to EN374.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC2: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC2	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC2	---	Worker - inhalative, long-term - systemic	6,67mg/m ³	0,026
PROC2	---	Worker - inhalative, short-term - systemic	26,67mg/m ³	0,103

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

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may

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be necessary to define appropriate site-specific risk management measures.

Health

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

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.