

METHANOL**Code : 14003****SECTION 1. Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Chemical description : Methanol , Methyl alcohol , Spirit of wood .
Type of product : Pure product .
Reach registration number : 01-2119433307-44

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

- * Identified use(s) : See table on the front page of the annex.
- * Use(s) advised against : This product is not recommended for any industrial, professional or consumer use other than identified in table on the front page of the annex.
Not for use in ornamental articles, in tricks and jokes and in games (in accordance with Annex XVII to Regulation (EC) No 1907/2006) (3. Liquid substances or mixtures, which are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F, (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10, (c) hazard class 4.1, (d) hazard class 5.1).
Not for use in aerosol dispensers for entertainment and decorative purposes (in accordance with Annex XVII to Regulation (EC) No 1907/2006) (40. Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not).

1.3. Details of the supplier of the safety data sheet

Company identification : BRENNTAG N.V. - Nijverheidslaan 38 - BE-8540 DEERLIJK
TEL: +32(0)56/77.69.44 - FAX: +32(0)56/77.57.11
E-MAIL: info@brenntag.be - Website: www.brenntag.be

BRENNTAG Nederland B.V. - Donker Duyvisweg 44 - NL-3316 BM DORDRECHT
TEL: +31(0)78/65.44.944 - FAX: +31(0)78/65.44.919
E-MAIL: info@brenntag.nl - Website: www.brenntag.nl

1.4. Emergency telephone number

Emergency phone number : Belgium : Antipoison Center - Brussels
TEL: +32(0)70/245.245

The Netherlands : National Poisoning Information Center - Bilthoven
TEL: +31(0)30/274.88.88 (Only for the purpose of informing medical personnel in cases of acute intoxications)

SECTION 2. Hazards identification**2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

Flammable liquids - Category 2 - Danger (Flam. Liq. 2; H225)
Acute toxicity, oral - Category 3 - Danger (Acute Tox. 3, oral; H301)
Acute toxicity, dermal - Category 3 - Danger (Acute Tox. 3, dermal; H311)
Acute toxicity, inhalation - Category 3 - Danger (Acute Tox. 3, inhalation; H331)
Specific Target Organ Toxicity - Single exposure - Category 1 - Danger (STOT SE 1; H370)




2.2. Label elements**Label in accordance with Regulation (EC) No 1272/2008**

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SECTION 2. Hazards identification (continued)

- Dangerous ingredient(s) : Methanol
- Hazard pictogram(s)




- Signal word : Danger
- Hazard statements : H225 - Highly flammable liquid and vapour. H301 - Toxic if swallowed. H311 - Toxic in contact with skin. H331 - Toxic if inhaled. H370 - Causes damage to organ.
- 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/protective clothing/eye protection/face protection.
 - * - Response : P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor. P302+P352 - IF ON SKIN : Wash with plenty of soap and water. P304+P340+P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor/.../if you feel unwell.
 - * - Storage : P403+P235 - Store in well-ventilated place. Keep cool.

2.3. Other hazards

- * Physical/chemical hazards : Attacks metals with liberation of hydrogen gas. Burns with an invisible flame. Incomplete combustion may liberate toxic Carbon monoxide vapours.
- * Hazards for the health : A health dangerous concentration in the air will very quickly be reached by evaporation of this substance at app. 20°C; even faster by spraying. May cause diminished visual capacity to complete blindness.
- Hazards for the environment : No significant danger. This product is no substance or contains no PBT or vPvB (in accordance with Annex XIII).
- Hazards for the safety : Vapour may form explosive mixture with air.

SECTION 3. Composition/information on ingredients

3.1. Substances

Name component(s)	Weight %	CAS nr	EINECS nr	Index nr	Reach nr	CLASSIFICATION
Methanol	: > 99.85 %	67-56-1	200-659-6	603-001-00-X	01-2119433307-44	Flam. Liq. 2; H225 Acute Tox. 3 (oral); H301 Acute Tox. 3 (skin); H311 Acute Tox. 3 (inhal); H331 STOT SE 1; H370

- * The full text of the (EU)H-statements is in section 16.
Note: SCL applicable

SECTION 4. First aid measures

4.1. Description of first aid measures

- General : CALL A PHYSICIAN IN ALL CIRCUMSTANCES. Never give anything by mouth to an unconscious person.
- First Aid Measures
 - * - Inhalation : Remove victim into fresh air. Allow the affected person to rest in semi-sitting position. If not breathing, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.

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SECTION 4. First aid measures (continued)

- * - Skin Contact : Remove contaminated clothing and shoes.
Rinse skin immediately with mild soap and plenty of water. (at least 20') (shower if necessary).
Consult a doctor.
- Eye Contact : Rinse immediately thoroughly and long (at least 15 min.) with plenty of water.
Remove contact lenses.
Consult eye doctor.
- * - Ingestion : DO NOT INDUCE VOMITING. Rinse mouth with water.
Immediately call a POISON CENTER or doctor/physician.

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

See section 11.

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

For specialist advice doctors should contact the NVCI or the Belgian Poison center.

- Additional Medical Information : Treat specifically against Methanol-poisoning.
Keep patient under observation, because symptoms of a Methanol poisoning only manifest after 18-36 h (or even longer).

SECTION 5. Firefighting measures

5.1. Extinguishing media

Extinguishing Media

- Suitable : Extinguishing powder , Alcohol resistant foam , Carbon dioxide (CO2) , Water spray .
- Unsuitable : Heavy water stream .

5.2. Special hazards arising from the substance or mixture

- Special Exposure Hazards : Fire may liberate carbon oxides (CO) and smoke.
Vapor mixes readily with air forming explosive mixtures.

5.3. Advice for firefighters

- Special Protective Equipment for Firefighters : Use self-contained breathing apparatus and wear protective clothes when in close proximity to fire.
- Special Procedures : Apply water spray or fog to cool nearby equipment. Avoid fire-fighting water to enter environment.

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- Personal Precautions : Eliminate every possible source of ignition (open fire, sparks, smoking, ...).
Evacuate all personnel immediately and ventilate area.
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)

6.2. Environmental precautions

- Environmental Precautions : Shut off leaks if without risks.
Dike in the spilled product as much as possible with inert material.
Prevent entry of product in public water, sewers or soil.
Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Methods for Cleaning Up : Collect the spillage in closable, suitable disposal containers.
Clean up any spills as soon as possible, using an inert absorbent material.
Residue is to be washed down with plenty of water.

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SECTION 6. Accidental release measures (continued)
6.4. Reference to other sections

For personal protection, see section 8.

For the removal of the waste product, see section 13.

SECTION 7. Handling and storage
7.1. Precautions for safe handling

Handling : Caution : SKIN ABSORPTION !
 AVOID FOG TRANSFORMATION ! STRONG HYGIENE !
 Prevent exposure to (pregnant) women.
 Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)
 When using, do not eat, drink or smoke.
 Emergency eye wash fountains and showers should be available in the immediate vicinity of any potential exposure.

7.2. Conditions for safe storage, including any incompatibilities

Storage : Keep only in the original, safely locked container in a dry, cool, dark, well ventilated and fireproof place.
 All dangerous products should be placed on a drip tray or should be barreled.
 Keep away from : Oxidizing agents , Strong acids , Light metals .

Protection against Fire and Explosion : Remove all sources of ignition (open fire, sparks, smoking, ...).
 With a temperature equal to or higher than the flash point, the mixture steam-air may create a highly flammable and explosive mixture.
 Do not use compressed air to either agitate or transfer contents of storage containers (tanks) / shipping drums containing this material.
 Use explosionproof equipment.
 Use spark-arm implement.

Packaging Material : Galvanised carbon steel , Stainless steel .

Insuitable Packaging Material : Aluminium , Lead (+ Alloys) , Zinc , Some synthetics , Rubber , Coating agent .

7.3. Specific end use(s)

For identified uses, see subsection 1.2 and/or exposure scenarios.

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

Occupational Exposure Limits : Methanol : Limit value (BE) : 200 ppm (266 mg/m³) (2014) (D)
 Methanol : Short time value (BE) : 250 ppm (333 mg/m³) (2014) (D)
 Methanol : Limit value (TWA 8 h) (NL) : 100 ppm (133 mg/m³) (2011) (H)
 (D) The mention "D" means that the absorption of the agent by skin, mucous membranes or eyes constitutes an important part of the total exposition. This absorption can be the consequence of direct contact as well as his presence in the air.
 (H) The addition of an "H" indicates that the substance is relative easily absorbed by the skin.

Biological limit values : They will be included when available.

DNELs : • Methanol : Worker, acute - local effects, inhalation : 260 mg/m³
 • Methanol : Worker, acute - systemic effects, dermal : 40 mg/kg bw/ day
 • Methanol : Worker, acute - systemic effects, inhalation : 260 mg/m³
 • Methanol : Worker, long-term - local effects, inhalation : 260 mg/m³
 • Methanol : Worker, long-term - systemic effects, dermal : 40 mg/kg bw/ day
 • Methanol : Worker, long-term - systemic effects, inhalation : 260 mg/m³
 • Methanol : Consumer, acute - local effects, inhalation : 50 mg/m³
 • Methanol : Consumer, acute - systemic effects, dermal : 8 mg/kg bw/ day

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SECTION 8. Exposure controls/personal protection (continued)

- * PNECs
 - Methanol : Consumer, acute - systemic effects, inhalation : 50 mg/m³
 - Methanol : Consumer, long-term - systemic effects, dermal : 8 mg/kg bw/ day
 - Methanol : Consumer, long-term - local effects, inhalation : 50 mg/m³
 - Methanol : Consumer, long-term - systemic effects, inhalation : 50 mg/m³
 - Methanol : Fresh water : 20,8 mg/l
 - Methanol : Marine water : 2,08 mg/l
 - Methanol : Fresh water sediment : 77 mg/kg
 - Methanol : Marine water sediment : 7,7 mg/kg
 - Methanol : Soil : 3,18 mg/kg
 - Methanol : Intermittent release : 1540 mg/l
 - Methanol : Sewage treatment plant : 100 mg/l

8.2. Exposure controls

- Engineering Measures : Ventilation , Local exhaust .
- Personal Protection Equipment
 - Respiratory protection : CE-approved mask for organic vapours and solvents (type AX, brown).
 - Skin protection : Suitable protective clothing .
 - * - Hand protection : Suitable material for safety gloves (EN 374):
The suitability of the gloves and the breakthrough time for a specific workplace should be discussed with the producers of the protective gloves.
 - material : Butyl rubber .
 - thickness : 0,7 mm
 - breakthrough time : > 480'
 - Eye/Face protection : Closed safety glasses or face shield.
- Environmental exposure controls : See sections 6, 7, 12 and 13.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical State (20°C) : Liquid .
- Form/Colour : Clear , Colourless .
- Odour : Pungent odour .
- Odour threshold : 0,75 mg/m³
- pH value : Not applicable.
- Melting/Freezing point : -98 °C
- Boiling Point/Range (1013 hPa) : 65 °C
- Flash point : 9,7 °C
- Evaporation rate : 5,3 (Ether = 1)
2,1 (Butyl acetate = 1)
- Explosion limits in air : 5,5 - 44 vol. %
- * Vapour pressure (20°C) : 12,9 kPa
- Vapour pressure (50°C) : 55,2 kPa
- Relative vapour density (air=1) : 1,1
- Relative density of saturated vapour/air mixture (air=1) : 1,01
- * Relative density (water=1) : 0,79 - 0,80
- Density (20°C) : 0,79 - 0,80 kg/l
- Solubility in water : Complete solubility .
- Log P Octanol/Water (20°C) : -0,7

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SECTION 9. Physical and chemical properties (continued)

Auto-ignition temperature	: 455 °C
Minimum ignition energy	: 0,14 mJ
Decomposition temperature	: Not established.
* Viscosity (20°C)	: 0,544-0,597 mPa.s (Dynamic)
Explosive properties	: Highly explosive in presence of metals and oxidizing agents.
* Oxidizing properties	: No chemical groups associated with oxidizing properties

9.2. Other information

Surface tension (20°C)	: 22,61 mN/m
Specific leading	: 1,5*10E5 pS/m
% Volatiles (by weight)	: 100
Critical pressure	: 7952 kPa
Critical temperature	: 240 °C
Saturation concentration	: 166 g/m ³

SECTION 10. Stability and reactivity

10.1. Reactivity

Reactivity : Reacts violently with oxidizing agents and strong acids.

10.2. Chemical stability

Stability : Stable at normal circumstances .

10.3. Possibility of hazardous reactions

Hazardous reactions : Vapour may form explosive mixture with air.
Contact with metallic substances may release inflammable hydrogen gas.
Incomplete combustion may liberate toxic Carbon monoxide vapours.

10.4. Conditions to avoid

Conditions to avoid : High temperatures , Moisture , Direct sunlight .

10.5. Incompatible materials

Materials to avoid : Oxidizing agents , Strong acids , Light metals .

10.6. Hazardous decomposition products

* Hazardous Decomposition Products : Carbon oxides , Hydrogen , Formaldehyde .

SECTION 11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- * - Inhalation : Toxic if inhaled.
Exposure to high concentrations may cause lowering of consciousness and disturbance of eye sight.
In considerable concentrations, product may cause shaking, attacks, ...
Symptoms include: Dizziness , Headache , Cough , Vomiting , Abdominal pain , Drowsiness , Nausea , Shortness of breath , Unconsciousness .
• Methanol : LC50 (Rat, inhalation, 4 h) : 128,2 mg/l (Air)
- * - Skin contact : Toxic in contact with skin.
Product is being absorbed through the skin. Product degrades skin.
Symptoms include: Dry skin , Redness .
• Methanol : LD50 (Rabbit, dermal) : 15800-17100 mg/kg

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SECTION 11. Toxicological information (continued)

* - Ingestion	: Toxic if swallowed. Can lead to oxygen toxicity (acidosis). Symptoms include: See "Inhalation" . • Methanol : LD50 (Rat, oral) : 1187-2769 mg/kg (15-35% Solution)
Skin corrosion/irritation	: Skin contact can damage eczema.
Serious eye damage/irritation	: No effects known.
Aspiration hazard	: The product may cause central nervous system depression, resulting in function disturbances. (Parkinson like symptoms) The effect may be delayed onset.
Respiratory or skin sensitisation	: Not sensitive .
Carcinogenicity	: Not listed as carcinogenic .
Mutagenicity	: Not listed as mutagenic .
Reproductive toxicity	: Europe : Not listed for reproductive toxicity . The Netherlands : Methanol is included in the SZW-list .
Specific target organ toxicity - single exposure	: To human : The product may cause central nervous system depression. (Resulting in : Headache , Dizziness , Dimming of vision) For animals : Target organ(s) : Eyes (LOAEL = 2000 mg/kg)
Specific target organ toxicity - repeated exposure	: To human : Listed not for organ toxicity . For animals : Target organ(s) : Heart , Brains , Liver (NOAEC = 0,13 mg/l)

SECTION 12. Ecological information

12.1. Toxicity

* Ecotoxicity	: • Methanol : LC50 (Fish, 96 h) : 15400 mg/l (Lepomis macrochirus) (OECD Guideline 203) • Methanol : EC50 (Algae, 96 h) : 22000 mg/l (Pseudokirchneriella subcapitata) (OECD Guideline 201) • Methanol : EC50 (Daphnia magna, 48 h) : > 10000 mg/l (OECD Guideline 202)
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12.2. Persistence and degradability

Persistence and degradability	: • Methanol : Persistence and degradability : Readily biodegradable .
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12.3. Bioaccumulative potential

Bioaccumulation	: • Methanol : Bioaccumulation : Bioaccumulation not expected .
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12.4. Mobility in soil

Mobility	: • Methanol : Mobility : The product is practically not absorbed in soil or sediments.
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12.5. Results of PBT and vPvB assessment

Evaluation	: • Methanol : PBT/vPvB : No
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12.6. Other adverse effects

Photochemical ozone creation potential	: No data available.
Ozone depletion potential	: No data available.
Endocrine disrupting potential	: No data available.
Global warming potential	: No data available.

SECTION 13. Disposal considerations

13.1. Waste treatment methods

Waste from residues/Unused products	: The product has to be destroyed according to national or local legislation, by a company specialised in handling hazardous waste products.
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- European list of waste products : XXXXXX - European waste product code. This code is assigned on the basis of the most current applications and can not be representative for pollutions which are arisen at the effective use of the product. The producer of the waste has to evaluate its process himself and has to grant the appropriate waste coding. See Decision 2001/118/EC.
- Removal contaminated packaging : Packing is to be used exclusively for the packing of this product. After use, empty and close the packing very carefully. In case of returned packing, the empty packing can be offered back to the supplier.

SECTION 14. Transport information**14.1. UN number**

UN Number : 1230

14.2. UN proper shipping name

ADR/RID Name : UN 1230 Methanol, 3 (6.1), II, (D/E)

ADN Name : UN 1230 Methanol , 3 (6.1), II

IMDG Name : UN 1230 Methanol , 3, (6.1), II, (9,7°C)

IATA Name : UN 1230 Methanol , 3, (6.1), II

14.3. Transport hazard class(es)

Class : 3 + 6.1

14.4. Packing group

Packaging Group : II

14.5. Environmental hazards

Environmentally hazard : No

Marine pollutant : No

14.6. Special precautions for user

Danger number : 336

Hazard Label(s) : 3 + 6.1

EmS-N° : F-E , S-D

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

Type ship : 3

Pollution category : Y

SECTION 15. Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

- Inventories : Australian inventory (AICS): Listed in inventory.
Canadian inventory (DSL): Listed in inventory.
Chinese inventory (IECS): Listed in inventory.
European inventory (EINECS): Listed in inventory.
Japanese inventory (ENCS): Listed in inventory.
Korean inventory (KECI): Listed in inventory.
Philippine inventory (PICCS): Listed in inventory.
Inventory of the United States (TSCA): Listed in inventory.
- NFPA n° : 1-3-0
- Relevant EU Rule(s) : Directive 92/85/EEC of the Council of 19 October 1992 on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding
Directive 96/82/EC of the Council of 9 December 1996 on the control of major-

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SECTION 15. Regulatory information (continued)

accident hazards involving dangerous substances
 Directive 98/24/EC of the Council of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work
 Directive 1999/13/EC of the Council of 11 March 1999 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations
 Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC
 Decision 2001/118/EC of the Commission of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes
 Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
 Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (Reach)

National regulations

- * - Germany : WGK : 1
- * - Netherlands : Water damaging : 11
 Decontamination exertion : B
 SZW-list of reproduction toxic substances : Methanol

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out for the material.

SECTION 16. Other information

This safety data sheet has been drawn up in accordance with Regulation (EC) No 1907/2006.
 This safety data sheet is exclusively made for industrial/professional use.

* Has changed compared to previous revision.

- Changes : General revision
- * Sources of used key data : The information contained herein is based on the present state of our knowledge (Producers of starting materials , Chemical cards , ...)
 See also on the webaddress:
<http://apps.echa.europa.eu/registered/registered-sub.aspx#search>
- (EU)H-statement(s) : H225 - Highly flammable liquid and vapour.
 H301 - Toxic if swallowed.
 H311 - Toxic in contact with skin.
 H331 - Toxic if inhaled.
 H370 - Causes damage to organ.
- List of abbreviations and acronyms : Acute Tox. 3, dermal : Acute toxicity, dermal - Category 3
 Acute Tox. 3, inhalation : Acute toxicity, inhalation - Category 3
 Acute Tox. 3, oral : Acute toxicity, oral - Category 3
 ADN (Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation interieur) : European agreement concerning the international carriage of dangerous goods by inland waterways
 ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : European agreement concerning the international carriage of dangerous goods by road
 CO : Carbon monoxide
 DNEL (Derived No Effect Level) : an estimated safe exposure level
 EC50 : median Effective Concentration

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EmS (Emergency Schedule) : the first code refers to the relevant fire schedule and the second code refers to the relevant spillage schedule
EPDM : Ethylene propylene diene monomer
Flam. Liq. 2 : Flammable liquids - Category 2
IATA (International Air Transport Association) : provisions concerning the international carriage of dangerous goods by air
IMDG (International Maritime Dangerous Goods code)
LC50 : median Lethal Concentration
LD50 : median Lethal Dose
NFPA (National Fire Protection Association) or fire diamant
NOEC (No Observed Effect Concentration)
NVCI : National Poisoning Information Center
PVC : Polyvinyl chloride
PBT : persistent, bioaccumulative and toxic
PNEC (Predicted No Effect Concentration) : concentration below which exposure to a substance is not expected to cause adverse effects
RCP (Reciprocal Calculation Procedure)
REACH : Registration, Evaluation, Authorisation and restriction of Chemicals
RID (Règlement concernant le transport International ferroviaire des marchandises Dangereuses) : Regulation concerning the International carriage of Dangerous goods by rail
SCL (Specific Concentration Limits)
STOT SE 1 : Specific Target Organ Toxicity - Single exposure - Category 1
SZW-list : Non-limitative list of reproduction toxic substances to which the additional registration obligation applies as referred to in Article 4.2a, second paragraph of the Working conditions decree
TWA (Time-Weighted Average) : the average exposure over a specified period
WGK (Wassergefährdungsklasse) : a German classification of substances that indicate the environmental hazard for surface water
vPvB : very persistent and very bioaccumulative

This information is to our knowledge correct and complete on the date of issue of this safety data sheet. The information only concerns the product and does not give any guarantee for the quality and the completeness of the properties of the product, or in case of mixing or using in any other process. It remains the responsibility of the user to assure himself that the information is suitable and complete concerning the special use he makes of the product.

BRENNTAG denies all responsibility for loss or damage resulting from the use of these data.

End of document

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

Methanol

Version 1.2

Print Date 06.11.2015

Revision date / valid from 06.11.2015

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	Manufacture of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	1, 4	NA	ES1740
2	Use as an intermediate	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	6a, 6b	NA	ES1746
3	Distribution of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9	1, 2	NA	ES1749
4	Formulation & (re)packing of substances and mixtures	3	10	NA	1, 2, 3, 4, 8a, 8b, 9, 15	2	NA	ES1796
5	Use in Cleaning Agents	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 10, 13	4	NA	ES1798
6	Use in Cleaning Agents	22	NA	NA	1, 2, 3, 4, 8a, 8b, 10, 11, 13	8a, 8d	NA	ES1801
7	Use in Cleaning Agents	21	NA	35	NA	8a, 8d	NA	ES1831
8	Use as a fuel	3	10	NA	1, 2, 3, 8a, 8b, 16	7	NA	ES1803
9	Use as a fuel	22	NA	NA	1, 2, 3, 8a, 8b, 16	8b, 8e, 9a, 9b	NA	ES1806
10	Use as a fuel	21	NA	13	NA	8b, 8e, 9a, 9b	NA	ES1834
11	Use in laboratories	3	NA	NA	10, 15	4	NA	ES1813
12	Use in laboratories	22	NA	NA	10, 15	8a	NA	ES1827
13	Use in de-icing and anti-icing applications	21	NA	4	NA	8a, 8d	NA	ES1837
14	Use as water treatment chemicals	3	NA	NA	2	4, 6b	NA	ES2315
15	Use in oil and gas field drilling and production operations	22	NA	NA	4, 5, 8a, 8b	9b	NA	ES1840
16	Use in oil and gas field drilling and production operations	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b	4	NA	ES1842

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

Methanol

Version 1.2

Print Date 06.11.2015

Revision date / valid from 06.11.2015

1. Short title of Exposure Scenario 1: Manufacture 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: 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 Categories	ERC1: Manufacture of substances ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Manufacture of substance or use as an intermediate, process chemical or extracting agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC4

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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	One hand, face side only. 240 cm ² (PROC1, PROC3, PROC15)
	Exposed skin areas	Two hands face side only. 480 cm ² (PROC2, PROC4, PROC8b)
	Exposed skin areas	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and	General exposures	Provide extraction ventilation at points where

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measures to control dispersion from source towards the worker

(closed systems) with sample collection with occasional controlled exposure	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. Use a sampling system designed to control exposure.(PROC2, PROC3, PROC4, PROC8a, PROC8b)
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	Clear transfer lines prior to de-coupling. Ensure material transfers are under containment or extract ventilation. (Efficiency: 97 %)(PROC8b)
Storage with occasional controlled exposure	Avoid dip sampling. Clear transfer lines prior to de-coupling. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Provide extraction ventilation at 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

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1, PROC3,	---	worker dermal, short and	0,34mg/kg bw/day	0,008

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PROC15		long term - systemic		
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, PROC15	---	Worker - inhalative, long-term - systemic	13,33mg/m3	0,051
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
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

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 2: 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: 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 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/berge, 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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
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)	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC3)

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Use in contained batch processes	
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)
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

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/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, PROC15	---	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,	53,33mg/m3	0,205

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		short-term - systemic		
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/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

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: 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: 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 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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	One hand, face side only. 240 cm ² (PROC1, PROC3)
	Exposed skin areas	Two hands 960 cm ² (PROC8a)
	Exposed skin areas	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, unless stated differently.	
Technical conditions and measures to control dispersion	General exposures (closed systems)	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC2)

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from source towards the worker

with sample collection with occasional controlled exposure	
General exposures (closed systems) Use in contained batch processes	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC3)
General exposures (open systems) Batch process with sample collection	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC4)
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

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	1,37mg/kg bw/day	0,034

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		long term - systemic		
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
PROC3, PROC4	---	Worker - inhalative, short-term - systemic	53,33mg/m ³	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/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
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 4: 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
Process categories	<p>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 PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	One hand, face side only. 240 cm ² (PROC1, PROC3, PROC15)
	Exposed skin areas	Two hands face side only. 480 cm ² (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin areas	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and	General exposures	Provide extract ventilation to points where

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measures to control dispersion from source towards the worker

(closed systems) with sample collection with occasional controlled exposure	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) 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

Use of ECETOC TRA Version 2 with modifications.

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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
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.

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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 5: Use in Cleaning Agents

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	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 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
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 transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	One hand, face side only. 240 cm ² (PROC1, PROC3)
	Exposed skin areas	Two hands face side only. 480 cm ² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin areas	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless	1000 m ³ (PROC7)

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	stated differently. Room size	
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)
	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 (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	Two hands 960 cm ² (PROC10)
	Technical conditions and measures to control dispersion from source towards the worker	Cleaning with low-pressure washers

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

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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/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	---	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-	26,67mg/m3	0,103

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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.

Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 6: Use in Cleaning Agents

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	<p>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</p>
Environmental Release Categories	<p>ERC8a: Wide dispersive indoor use of processing aids in open systems 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 % (unless stated differently).
	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 (unless stated differently).	
	Avoid carrying out operation for more than 4 hours.(PROC4)	
Human factors not influenced by risk management	Exposed skin areas	One hand, face side only. 240 cm ² (PROC1, PROC3)
	Exposed skin areas	Two hands face side only. 480 cm ² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin areas	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, unless stated differently.	

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	Avoid carrying out activities involving exposure for more than 4 hours.(PROC4)	
	Room size	1000 m3(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)
	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 mixture 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 mixture 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 mixture 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

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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-term - systemic	13,33mg/m3	0,051
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,	33,34mg/m3	0,128

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		short-term - systemic		
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 7: Use in Cleaning Agents

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC35: Washing and cleaning products (including solvent based products)
Environmental Release Categories	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

No exposure assessment presented for the environment.

2.2 Contributing scenario controlling consumer exposure for: PC35: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2,5%
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Amount used	Amount used per event	1 kg
	Relevant for inhalative exposure estimates.	
	Amount used per event	0,16 g
	Relevant for dermal exposure estimates.	
Frequency and duration of use	Exposure duration per event	2 h
	Frequency of use	102 days/year
Human factors not influenced by risk management	For each use event, assumes swallowed amount of	0,4 g (gram)(PC35)
Other given operational conditions affecting consumers exposure	Ventilation rate per hour	0,5
	Covers use in a one car garage (34m ³) under typical ventilation.	

2.3 Contributing scenario controlling consumer exposure for: PC35: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 5%
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Amount used	Amount used per event	16,2 g

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Frequency and duration of use	Exposure duration per event	1 h
	Frequency of use	365 days/year
Human factors not influenced by risk management	Exposed skin areas	Two hands 960 cm ²
	Other given operational conditions affecting consumers exposure	Room size Ventilation rate per hour
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Room size	15 m ³
	Ventilation rate per hour	2,5
Consumer Measures	Ensure spraying away from persons.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.

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>

For further information on the assessment method, see:

<http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp>

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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1. Short title of Exposure Scenario 8: Use as a 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
Process categories	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) 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 PROC16: Using material as fuel sources, limited exposure to unburned product to be expected
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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	One hand, face side only. 240 cm ² (PROC1, PROC3, PROC16)
	Exposed skin areas	Two hands face side only. 480 cm ² (PROC2, PROC8b)
	Exposed skin areas	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
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)	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC3)

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Batch process	
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)

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

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

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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

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 as a fuel

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	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) 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 PROC16: Using material as fuel sources, limited exposure to unburned product to be expected
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor 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: 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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	One hand, face side only. 240 cm ² (PROC1, PROC3, PROC16)
	Exposed skin areas	Two hands face side only. 480 cm ² (PROC2, PROC8b)
	Exposed skin areas	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
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	Provide extract ventilation to points where

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	(closed systems) Batch process	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 mixture to 5 %.(PROC8a, PROC8b)
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

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/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-term - systemic	13,33mg/m3	0,051
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
PROC8a	---	worker dermal, short and long term - systemic	0,68mg/kg bw/day	0,017
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	16,67mg/m3	0,064
PROC8b	---	Worker - inhalative, short-term - systemic	33,34mg/m3	0,128
PROC16	---	Worker - inhalative, long-term - systemic	66,67mg/m3	0,256
PROC16	---	Worker - inhalative, short-term - systemic	133,34mg/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 10: Use as a fuel

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC13: Fuels
Environmental Release Categories	ERC8b: Wide dispersive indoor use of reactive substances in open systems ERC8e: Wide dispersive outdoor use of reactive substances in open systems ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems

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

No exposure assessment presented for the environment.

2.2 Contributing scenario controlling consumer exposure for: PC13: Liquid: Automotive Refuelling

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Amount used	Amount used per event	37,5 kg
Frequency and duration of use	Exposure duration per event	3 min
	Frequency of use	104 days/year
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 210 cm ²
Other given operational conditions affecting consumers exposure	Outdoor use.	

2.3 Contributing scenario controlling consumer exposure for: PC13: Liquid: Lamp oil

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
Amount used	Amount used per event	800 g
Frequency and duration of use	Exposure duration per event	1 min
	Frequency of use	104 days/year

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Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 210 cm ²
	Other given operational conditions affecting consumers exposure	Room size
	Ventilation rate per hour	0,5

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

PC13: Liquid: Lamp oil: ECETOC TRA
ConsExpo

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC13: Liquid: Automotive Refuelling	---	Consumer - inhalative, long-term - systemic	0,287mg/m ³	---
PC13: Liquid: Automotive Refuelling	---	Consumer - inhalative, short-term - systemic	41,3mg/m ³	---
PC13: Liquid: Lamp oil	---	Consumer dermal, acute and long term - systemic	0,34mg/kg bw/day	---
PC13: Liquid: Lamp oil	---	Consumer - inhalative, long-term - systemic	4,67mg/m ³	---
PC13: Liquid: Lamp oil	---	Consumer - inhalative, short-term - systemic	9,34mg/m ³	---

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>

For further information on the assessment method, see:

<http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp>

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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1. Short title of Exposure Scenario 11: 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 (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	Two hands 960 cm ² (PROC10)
	Exposed skin areas	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, unless stated differently.	
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)

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC10	---	worker dermal, short and	21,94mg/kg bw/day	0,549

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		long term - systemic		
PROC10	---	Worker - inhalative, long-term - systemic	26,67mg/m3	0,103
PROC10	---	Worker - inhalative, short-term - systemic	53,34mg/m3	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/m3	0,026
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 12: 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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	Two hands 960 cm ² (PROC10)
	Exposed skin areas	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, unless stated differently.	
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 mixture 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

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PA100056_001		35/44		EN

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PROC10	---	worker dermal, short and long term - systemic	1,37mg/kg bw/day	0,034
PROC10	---	Worker - inhalative, long-term - systemic	33,33mg/m3	0,128
PROC10	---	Worker - inhalative, short-term - systemic	66,67mg/m3	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/m3	0,051
PROC15	---	Worker - inhalative, short-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.

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1. Short title of Exposure Scenario 13: Use in de-icing and anti-icing applications

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC4: Anti-freeze and de-icing products
Environmental Release Categories	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

No exposure assessment presented for the environment.

2.2 Contributing scenario controlling consumer exposure for: PC4: Washing car window

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2,5%
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Amount used	Amount used per event	100 g
Frequency and duration of use	Exposure duration per event	2 h
	Frequency of use	102 days/year
Human factors not influenced by risk management	Exposed skin areas	Hands and forearms. 1900 cm ²
Other given operational conditions affecting consumers exposure	Ventilation rate per hour	0,5
	Covers use in a one car garage (34m ³) under typical ventilation.	

2.3 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 5%
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Amount used	Amount used per event	16,2 g
Frequency and duration of use	Exposure duration per event	1 h
	Frequency of use	365 days/year
Human factors not influenced by risk management	Exposed skin areas	Two hands 960 cm ²
Other given operational	Room size	15 m ³

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conditions affecting consumers exposure

Ventilation rate per hour	2,5
---------------------------	-----

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.

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>

For further information on the assessment method, see:

<http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp>

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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Print Date 06.11.2015

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1. Short title of Exposure Scenario 14: 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 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Human factors not influenced by risk management	Exposed skin areas	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, unless stated differently.
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

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PA100056_001		39/44		EN

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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

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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Print Date 06.11.2015

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1. Short title of Exposure Scenario 15: Use in oil and gas field drilling and production operations

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	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
Environmental Release Categories	ERC9b: Wide dispersive outdoor use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC9b

No exposure assessment presented for the environment.

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC8b

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Exposure duration per day	< 4 h(PROC4)
	Frequency of use	< 240 days/year(PROC5, PROC8a, PROC8b)
	Covers daily exposures up to 8 hours (unless stated differently).(PROC5, PROC8a, PROC8b)	
Human factors not influenced by risk management	Exposed skin areas	Two hands face side only. 480 cm ² (PROC4, PROC5, PROC8b)
	Exposed skin areas	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Limit the substance content in the mixture to 5 %.(PROC5, PROC8a, PROC8b)	
	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Provide local exhaust ventilation (LEV). (Efficiency: 80 %)(PROC4)	

3. Exposure estimation and reference to its source

Environment

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No exposure assessment presented for the environment.

Workers

Used ECETOC TRA model.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
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
PROC5, PROC8a	---	worker dermal, short and long term - systemic	0,68mg/kg bw/day	0,017
PROC5, PROC8a	---	Worker - inhalative, long-term - systemic	33,33mg/m3	0,128
PROC5, PROC8a	---	Worker - inhalative, short-term - systemic	66,67mg/m3	0,256
PROC8b	---	worker dermal, short and long term - systemic	0,34mg/kg bw/day	0,008
PROC8b	---	Worker - inhalative, long-term - systemic	16,67mg/m3	0,064
PROC8b	---	Worker - inhalative, short-term - systemic	33,34mg/m3	0,128

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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1. Short title of Exposure Scenario 16: Use in oil and gas field drilling and production operations

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	<p>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</p>
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: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	> 10 kPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Limit the substance content in the mixture to 5 %.(PROC8a, PROC8b)
	Filling / preparation of equipment from drums or containers	Limit the substance content in the mixture to 5 %.(PROC8a, PROC8b)
	Drill floor operations General exposures (closed systems)	Ensure operation is undertaken outdoors.(PROC4)
	Drill floor operations General exposures (open systems)	Ensure operation is undertaken outdoors.(PROC4)
	Operation of solids	Ensure material transfers are under containment or

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	filtering equipment	extract ventilation. Avoid carrying out operation for more than 4 hours.(PROC4)
	Treatment and disposal of filtered solids	Ensure material transfers are under containment or extract ventilation.(PROC3)
	Mixing operations (open systems)	Limit the substance content in the mixture to 5 %.(PROC5)
	Equipment cleaning and maintenance	Limit the substance content in the mixture to 5 %. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.(PROC2, PROC8a, PROC8b)
	Batch process with occasional controlled exposure	Provide extract ventilation to points where emissions occur.(PROC3)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

3. Exposure estimation and reference to its source

Environment
No exposure assessment presented for the environment.

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

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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QUALITY SYSTEMS		
ISO 9001	Yes	Yes
ISO 14001	Yes	Yes
ISO 22000	Yes	Yes
FSSC 22000	Yes	Yes
GMP+ -feed	Yes	Yes
OHSAS18001	-	Yes
ESAD	Yes	Yes
other	-	AEO