# SAFETY DATA SHEET

according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended

**Creation Date** 27-Apr-2009 **Revision Date** 12-Oct-2023 **Revision Number** 14

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

| | |
|---|---|
| **Product Description:** | **Methanol** |
| **Cat No. :** | **A456-1; A456-212; A456-4; A456-500** |
| **Synonyms** | Methyl alcohol |
| **Index No** | 603-001-00-X |
| **CAS No** | 67-56-1 |
| **EC No** | 200-659-6 |
| **Molecular Formula** | C H4 O |
| **REACH registration number** | 01-2119433307-44-0232 |

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

| | |
|---|---|
| **Recommended Use** | Laboratory chemicals. |
| **Sector of use** | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites<br>SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen) |
| **Product category** | PC21 - Laboratory chemicals |
| **Process categories** | see SECTION 16 for a complete list of uses for which an exposure scenario is provided as an annex |
| **Environmental release category** | ERC1 - Manufacture of substances<br>ERC2 - Formulation of preparations (mixtures)<br>ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles<br>ERC8a - Wide dispersive indoor use of processing aids in open systems |
| **Uses advised against** | SU21 - Consumer uses: Private households (= general public = consumers)<br>PC13 - Fuels<br>REACH Annex XVII Restriction - refer to SECTION 15 |

### 1.3. Details of the supplier of the safety data sheet

**Company**

**UK entity/business name**
Fisher Scientific UK
Bishop Meadow Road,
Loughborough, Leicestershire LE11 5RG,
United Kingdom

**EU entity/business name**
Thermo Fisher Scientific
Janssen Pharmaceuticalaan 3a, 2440 Geel,
Belgium

**E-mail address** begel.sdsdesk@thermofisher.com

### 1.4. Emergency telephone number

CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887
For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

**CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567**

**Physical hazards**

| | |
|---|---|
| Flammable liquids | Category 2 (H225) |

**Health hazards**

| | |
|---|---|
| Acute oral toxicity | Category 3 (H301) |
| Acute dermal toxicity | Category 3 (H311) |
| Acute Inhalation Toxicity - Vapors | Category 3 (H331) |
| Specific target organ toxicity - (single exposure) | Category 1 (H370) |

**Environmental hazards**

Based on available data, the classification criteria are not met

*Full text of Hazard Statements: see section 16*

### 2.2. Label elements

**Signal Word** **Danger**

**Hazard Statements**

H225 - Highly flammable liquid and vapor
H301 + H311 + H331 - Toxic if swallowed, in contact with skin or if inhaled
H370 - Causes damage to organs

**Precautionary Statements**

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P302 + P350 - IF ON SKIN: Gently wash with plenty of soap and water
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P310 - Immediately call a POISON CENTER or doctor/physician

### 2.3. Other hazards

Substance is not considered to be persistent, bioaccumulative and toxic (PBT). Substance is not considered to be very persistent and very bioaccumulative (vPvB).

Toxic to terrestrial vertebrates
This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

| Component | CAS No | EC No | Weight % | CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567 |
|---|---|---|---|---|
| Methyl alcohol | 67-56-1 | 200-659-6 | >95 | Flam. Liq. 2 (H225)<br>Acute Tox. 3 (H301)<br>Acute Tox. 3 (H311)<br>Acute Tox. 3 (H331)<br>STOT SE 1 (H370) |

| Component | Specific concentration limits (SCL's) | M-Factor | Component notes |
|---|---|---|---|
| Methyl alcohol | STOT Single Exp. 1 :: >= 10<br>STOT Single Exp. 2 :: 3 - < 10 | - | - |

| REACH registration number | 01-2119433307-44-0232 |
|---|---|

*Full text of Hazard Statements: see section 16*

## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

**General Advice** Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

**Eye Contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

**Skin Contact** Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

**Ingestion** Do NOT induce vomiting. Call a physician or poison control center immediately.

**Inhalation** Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

**Self-Protection of the First Aider** Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Remove all sources of ignition. No artificial respiration, mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus. Avoid contact with skin.

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

Difficulty in breathing. May cause blindness: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

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

**Notes to Physician** Treat symptomatically. Symptoms may be delayed.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

**Suitable Extinguishing Media**
Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

**Extinguishing media which must not be used for safety reasons**
Do not use a solid water stream as it may scatter and spread fire.

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

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Vapors may form explosive mixtures with air.

**Hazardous Combustion Products**
Carbon monoxide (CO), Formaldehyde.

### 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment as required. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.

### 6.2. Environmental precautions

Should not be released into the environment. See Section 12 for additional Ecological Information.

### 6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

### 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Do not breathe mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Take precautionary measures against static discharges.

**Hygiene Measures**
When using do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing.

**7.2. Conditions for safe storage, including any incompatibilities**

Keep container tightly closed in a dry and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition. Flammables area.

**Technical Rules for Hazardous Substances (TRGS) 510 Storage Class (LGK) (Germany)** Class 3

**7.3. Specific end use(s)**

Use in laboratories

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**8.1. Control parameters**

**Exposure limits**
List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020. **IRE -** 2021 Code of Practice for the Chemical Agents Regulations, Schedule 1. Published by the Health and Safety Authority

| Component | The United Kingdom | European Union | Ireland |
|---|---|---|---|
| Methyl alcohol | WEL - TWA: 200 ppm TWA; 266 mg/m³ TWA<br>WEL - STEL: 250 ppm STEL; 333 mg/m³ STEL | TWA: 200 ppm 8 hr<br>TWA: 260 mg/m³ 8 hr<br>Skin | TWA: 200 ppm 8 hr.<br>TWA: 260 mg/m³ 8 hr.<br>STEL: 600 ppm 15 min<br>STEL: 780 mg/m³ 15 min<br>Skin |

**Biological limit values**
List source(s):

**Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)**
See table for values

| Component | Acute effects local (Dermal) | Acute effects systemic (Dermal) | Chronic effects local (Dermal) | Chronic effects systemic (Dermal) |
|---|---|---|---|---|
| Methyl alcohol<br>67-56-1 ( >95 ) | | DNEL = 20mg/kg bw/day | | DNEL = 20mg/kg bw/day |

| Component | Acute effects local (Inhalation) | Acute effects systemic (Inhalation) | Chronic effects local (Inhalation) | Chronic effects systemic (Inhalation) |
|---|---|---|---|---|
| Methyl alcohol<br>67-56-1 ( >95 ) | DNEL = 130mg/m³ | DNEL = 130mg/m³ | DNEL = 130mg/m³ | DNEL = 130mg/m³ |

**Predicted No Effect Concentration (PNEC)**
See values below.

| Component | Fresh water | Fresh water sediment | Water Intermittent | Microorganisms in sewage treatment | Soil (Agriculture) |
|---|---|---|---|---|---|
| Methyl alcohol<br>67-56-1 ( >95 ) | PNEC = 20.8mg/L | PNEC = 77mg/kg sediment dw | PNEC = 1540mg/L | PNEC = 100mg/L | PNEC = 100mg/kg soil dw |

| Component | Marine water | Marine water sediment | Marine water intermittent | Food chain | Air |
|---|---|---|---|---|---|
| Methyl alcohol 67-56-1 ( >95 ) | PNEC = 2.08mg/L | PNEC = 7.7mg/kg sediment dw | | | |

**8.2. Exposure controls**

**Engineering Measures**
Use only under a chemical fume hood. Use explosion-proof electrical/ventilating/lighting equipment. Ensure that eyewash stations and safety showers are close to the workstation location.
Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment**

**Eye Protection** Tight sealing safety goggles (European standard - EN 166)

**Hand Protection** Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments |
|---|---|---|---|---|
| Butyl rubber | > 480 minutes | 0.35 mm | Level 6 | As tested under EN374-3 Determination of |
| Viton (R) | > 480 minutes | 0.70 mm | EN 374 | Resistance to Permeation by Chemicals |
| Neoprene gloves | < 60 minutes | 0.45 mm | | |
| Nitrile rubber | < 30 minutes | 0.38 mm | | |

**Skin and body protection** Long sleeved clothing.

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
**Recommended Filter type:** low boiling organic solvent Type AX Brown conforming to EN371

**Small scale/Laboratory use** Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls** No information available.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

**Physical State** Liquid

**Appearance** Colorless
**Odor** Alcohol-like

| | | |
|---|---|---|
| **Odor Threshold** | No data available | |
| **Melting Point/Range** | -98 °C / -144.4 °F | |
| **Softening Point** | No data available | |
| **Boiling Point/Range** | 64.7 °C / 148.5 °F | @ 760 mmHg |
| **Flammability (liquid)** | Highly flammable | On basis of test data |
| **Flammability (solid,gas)** | Not applicable | Liquid |
| **Explosion Limits** | **Lower** 6 vol%<br>**Upper** 31 vol% | |
| **Flash Point** | 12 °C / 53.6 °F | **Method -** No information available |
| **Autoignition Temperature** | 455 - °C / 851 - °F | |
| **Decomposition Temperature** | No data available | |
| **pH** | Not applicable | |
| **Viscosity** | 0.55 cP at 20 °C | |
| **Water Solubility** | Miscible | |
| **Solubility in other solvents** | No information available | |
| **Partition Coefficient (n-octanol/water)** | | |
| **Component** | **log Pow** | |
| Methyl alcohol | -0.74 | |
| **Vapor Pressure** | 128 hPa @ 20 °C | |
| **Density / Specific Gravity** | 0.791 | |
| **Bulk Density** | Not applicable | Liquid |
| **Vapor Density** | 1.11 | (Air = 1.0) |
| **Particle characteristics** | (liquid) Not applicable | |

### 9.2. Other information

| | |
|---|---|
| **Molecular Formula** | C H4 O |
| **Molecular Weight** | 32.04 |
| **VOC Content(%)** | 100 |
| **Explosive Properties** | Vapors may form explosive mixtures with air |
| **Evaporation Rate** | 5.2 (ether = 1) |
| **Surface tension** | 0.02255 N/m @ 20°C |

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

None known, based on information available

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

| | |
|---|---|
| **Hazardous Polymerization** | Hazardous polymerization does not occur. |
| **Hazardous Reactions** | None under normal processing. |

### 10.4. Conditions to avoid

Incompatible products. Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition.

### 10.5. Incompatible materials

Strong oxidizing agents. Strong acids. Acid anhydrides. Acid chlorides. Strong bases. Metals. Peroxides.

### 10.6. Hazardous decomposition products

Carbon monoxide (CO). Formaldehyde.

## SECTION 11: TOXICOLOGICAL INFORMATION

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

**Product Information**

**(a) acute toxicity;**

| | |
|---|---|
| **Oral** | Category 3 |
| **Dermal** | Category 3 |
| **Inhalation** | Category 3 |

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|---|---|---|
| Methyl alcohol | LD50 = 1187 – 2769 mg/kg (Rat) | LD50 = 17100 mg/kg ( Rabbit ) | LC50 = 128.2 mg/L ( Rat ) 4 h |

**(b) skin corrosion/irritation;** Based on available data, the classification criteria are not met

**(c) serious eye damage/irritation;** Based on available data, the classification criteria are not met

**(d) respiratory or skin sensitization;**

| | |
|---|---|
| **Respiratory** | Based on available data, the classification criteria are not met |
| **Skin** | Based on available data, the classification criteria are not met |

| Component | Test method | Test species | Study result |
|---|---|---|---|
| Methyl alcohol<br>67-56-1 ( >95 ) | OECD Test Guideline 406<br>Guinea Pig Maximisation Test (GPMT) | guinea pig | non-sensitising |

**(e) germ cell mutagenicity;** Based on available data, the classification criteria are not met

**(f) carcinogenicity;** Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

**(g) reproductive toxicity;** Based on available data, the classification criteria are not met

| Component | Test method | Test species / Duration | Study result |
|---|---|---|---|
| Methyl alcohol<br>67-56-1 ( >95 ) | OECD Test Guideline 416 | Rat / Inhalation<br>2 Generation | NOAEC =<br>1.3 mg/l (air) |

**Developmental Effects** Component substance is listed on California Proposition 65 as a developmental hazard.

**(h) STOT-single exposure;** Category 1

**Results / Target organs** Optic nerve, Central nervous system (CNS).

**(i) STOT-repeated exposure;** Based on available data, the classification criteria are not met

**Target Organs** None known.

**(j) aspiration hazard;** Based on available data, the classification criteria are not met

**Symptoms / effects,both acute and delayed** May cause blindness. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

**11.2. Information on other hazards**

**Endocrine Disrupting Properties** Assess endocrine disrupting properties for human health. This product does not contain any

known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

**12.1. Toxicity**

**Ecotoxicity effects** .

| Component | Freshwater Fish | Water Flea | Freshwater Algae |
|---|---|---|---|
| Methyl alcohol | Pimephales promelas: LC50 > 10000 mg/L 96h | EC50 > 10000 mg/L 24h | |

| Component | Microtox | M-Factor |
|---|---|---|
| Methyl alcohol | EC50 = 39000 mg/L 25 min<br>EC50 = 40000 mg/L 15 min<br>EC50 = 43000 mg/L 5 min | |

**12.2. Persistence and degradability** Readily biodegradable

**Persistence** Persistence is unlikely, based on information available.

| Component | Degradability |
|---|---|
| Methyl alcohol<br>67-56-1 ( >95 ) | DT50 ~ 17.2d<br>>94% after 20d |

**12.3. Bioaccumulative potential** Bioaccumulation is unlikely

| Component | log Pow | Bioconcentration factor (BCF) |
|---|---|---|
| Methyl alcohol | -0.74 | <10 dimensionless |

**12.4. Mobility in soil** The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces Will likely be mobile in the environment due to its volatility. Disperses rapidly in air

**Surface tension** 0.02255 N/m @ 20°C

**12.5. Results of PBT and vPvB assessment** Substance is not considered to be persistent, bioaccumulative and toxic (PBT). Substance is not considered to be very persistent and very bioaccumulative (vPvB).

**12.6. Endocrine disrupting properties**

**Endocrine Disruptor Information** This product does not contain any known or suspected endocrine disruptors

**12.7. Other adverse effects**

**Persistent Organic Pollutant** This product does not contain any known or suspected substance

**Ozone Depletion Potential** This product does not contain any known or suspected substance

## SECTION 13: DISPOSAL CONSIDERATIONS

**13.1. Waste treatment methods**

**Waste from Residues/Unused Products** Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

**European Waste Catalogue (EWC)** According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

**Other Information** Waste codes should be assigned by the user based on the application for which the product was used. Do not flush to sewer. Can be landfilled or incinerated, when in compliance with local regulations.

## SECTION 14: TRANSPORT INFORMATION

**IMDG/IMO**

| | |
|---|---|
| **14.1. UN number** | UN1230 |
| **14.2. UN proper shipping name** | METHANOL |
| **14.3. Transport hazard class(es)** | 3 |
| **Subsidiary Hazard Class** | 6.1 |
| **14.4. Packing group** | II |

**ADR**

| | |
|---|---|
| **14.1. UN number** | UN1230 |
| **14.2. UN proper shipping name** | METHANOL |
| **14.3. Transport hazard class(es)** | 3 |
| **Subsidiary Hazard Class** | 6.1 |
| **14.4. Packing group** | II |

**IATA**

| | |
|---|---|
| **14.1. UN number** | UN1230 |
| **14.2. UN proper shipping name** | METHANOL |
| **14.3. Transport hazard class(es)** | 3 |
| **Subsidiary Hazard Class** | 6.1 |
| **14.4. Packing group** | II |

**14.5. Environmental hazards** No hazards identified

**14.6. Special precautions for user** No special precautions required.

**14.7. Maritime transport in bulk according to IMO instruments** Not applicable, packaged goods

## SECTION 15: REGULATORY INFORMATION

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

**International Inventories**

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component | CAS No | EINECS | ELINCS | NLP | IECSC | TCSI | KECL | ENCS | ISHL |
|---|---|---|---|---|---|---|---|---|---|
| Methyl alcohol | 67-56-1 | 200-659-6 | - | - | X | X | KE-23193 | X | X |

| Component | CAS No | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Methyl alcohol | 67-56-1 | X | ACTIVE | X | - | X | X | X |

**Legend:** X - Listed '-' - Not Listed **KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

**Authorisation/Restrictions according to EU REACH**

| Component | CAS No | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|---|---|---|---|---|
| Methyl alcohol | 67-56-1 | - | Use restricted. See item 69. (see link for restriction details) Use restricted. See item 75. (see link for restriction details) | - |

**REACH links**
*https://echa.europa.eu/substances-restricted-under-reach*

**Seveso III Directive (2012/18/EC)**

| Component | CAS No | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements |
|---|---|---|---|
| Methyl alcohol | 67-56-1 | 500 tonne | 5000 tonne |

**Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals**
Not applicable

**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**
Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .
Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

**National Regulations**

**UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

**WGK Classification** See table for values

| Component | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|---|---|---|
| Methyl alcohol | WGK 2 | Class I : 20 mg/m³ (Massenkonzentration) |

| Component | France - INRS (Tables of occupational diseases) |
|---|---|
| Methyl alcohol | Tableaux des maladies professionnelles (TMP) - RG 84 |

| Component | Switzerland - Ordinance on the | Switzerland - Ordinance on | Switzerland - Ordinance of the |
|---|---|---|---|

| | Reduction of Risk from handling of hazardous substances preparation (SR 814.81) | Incentive Taxes on Volatile Organic Compounds (OVOC) | Rotterdam Convention on the Prior Informed Consent Procedure |
|---|---|---|---|
| Methyl alcohol<br>67-56-1 ( >95 ) | Prohibited and Restricted Substances | Group I | |

### 15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted by the manufacturer/importer

## SECTION 16: OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3**

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

**Legend**

**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances
**IECSC** - Chinese Inventory of Existing Chemical Substances
**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List
**ENCS** - Japanese Existing and New Chemical Substances
**AICS** - Australian Inventory of Chemical Substances
**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit
**ACGIH** - American Conference of Governmental Industrial Hygienists
**DNEL** - Derived No Effect Level
**RPE** - Respiratory Protective Equipment
**LC50** - Lethal Concentration 50%
**NOEC** - No Observed Effect Concentration
**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average
**IARC** - International Agency for Research on Cancer
Predicted No Effect Concentration (PNEC)
**LD50** - Lethal Dose 50%
**EC50** - Effective Concentration 50%
**POW** - Partition coefficient Octanol:Water
**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road
**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code
**OECD** - Organisation for Economic Co-operation and Development
**BCF** - Bioconcentration factor

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association
**MARPOL** - International Convention for the Prevention of Pollution from Ships
**ATE** - Acute Toxicity Estimate
**VOC** - (Volatile Organic Compound)

**Key literature references and sources for data**

https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.
Chemical incident response training.
Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

| | |
|---|---|
| **Creation Date** | 27-Apr-2009 |
| **Revision Date** | 12-Oct-2023 |
| **Revision Summary** | Not applicable. |

**This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as amended.**

**Disclaimer**

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

## End of Safety Data Sheet

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

# Methanol - Exposure Scenarios

| CAS No | REACH registration number | EC No |
|---|---|---|
| 67-56-1 | 01-2119433307-44-0232 | 200-659-6 |

**Exposure Scenarios Overview**

| Title | Sector of use | Process category(ies) | Environmental release category | ES Identifier |
|---|---|---|---|---|
| Manufacture or use as an intermediate or process chemical or extraction agent | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites | 1, 2, 3, 4, 8a, 8b, 15 | ERC1 - Manufacture of substances | ES1-M1 Methanol |
| Formulation of preparations and/or re-packaging | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites | 1, 2, 3, 4, 8a, 8b, 9, 15 | ERC2 - Formulation of preparations | ES2-F1 Methanol |
| Laboratory use | SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites | 10, 15 | ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles | ES3-L1 Methanol |
| Laboratory use | SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen) | 10, 15 | ERC8a - Wide dispersive indoor use of processing aids in open systems | ES4-L2 Methanol |

## Exposure scenario

### ES1 Manufacture of Methanol - ES1-M1 METHANOL

## Section 1 - Identification of the use

**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites

**Type** Worker

**Processes, tasks, activities covered** Manufacture or use as an intermediate or process chemical or extraction agent. 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

**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

**Process category(ies)**
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC15 - Use as laboratory reagent

**Environmental release category(ies)** ERC1 - Manufacture of substances

Readily biodegradable in water, soil and sediments, both under aerobic and anaerobic conditions. Compared to other loss mechanisms identified, including volatilization and chemical degradation, biodegradation is expected to be the dominant process controlling the fate in the soil, groundwater, and surface water environments.
Degraded in the atmosphere by photochemical, hydroxyl-radical dependent reactions. The estimated elimination half-life is calculated to be about 17 days. Due to the high solubility in water and its low octanol-water partition coefficient adsorption to soil is considered to be negligible. Given the value of the Henry's Law constant, once in water, it is likely to remain in the aqueous phase. No bioaccumulation is expected.
Not classified as harmful, toxic or very toxic to aquatic life. Not classified as "may cause long lasting effects to aquatic life". Not a PBT or vPvB substance. Therefore not classified with respect to environmental effects.

## Section 2 - Operational Conditions and Risk Management Measures

**Product characteristics**

| | |
|---|---|
| **Physical State** | Liquid |
| **pH** | 7-8 |
| **Water Solubility** | Miscible |
| **Vapor Pressure** | 23 hPa @ 20 °C |

Covers concentrations up to 100 %

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)**
ERC1 - Manufacture of substances
Readily biodegradable in water, soil and sediments, both under aerobic and anaerobic conditions. Compared to other loss mechanisms identified, including volatilization and chemical degradation, biodegradation is expected to be the dominant process controlling the fate in the soil, groundwater, and surface water environments.
Degraded in the atmosphere by photochemical, hydroxyl-radical dependent reactions. The estimated elimination half-life is calculated to be about 17 days. Due to the high solubility in water and its low octanol-water partition coefficient adsorption to soil is considered to be negligible. Given the value of the Henry's Law constant, once in water, it is likely to remain in the aqueous phase. No bioaccumulation is expected.
Not classified as harmful, toxic or very toxic to aquatic life. Not classified as "may cause long lasting effects to aquatic life". Not a PBT or vPvB substance. Therefore not classified with respect to environmental effects.

**Control of environmental exposure**
Readily biodegradable
Annual amount used in the EU Unspecified

**Environmental factors not influenced by risk management**

## Section 2.2 - Control of worker exposure

**General information on risk management related to physicochemical hazard**
Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Control entry to work area. Suitable fire detection system. Keep equipment under negative pressure. Check atmosphere for explosiveness and oxygen deficiencies. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

**Control of worker exposure**

| | |
|---|---|
| Process category(ies) | PROC1 - Use in closed process, no likelihood of exposure |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 240 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Undertake operation under enclosed conditions |
| Additional good practice advice beyond | Use chemically resistant face shield, goggles or safety glasses with side shields when there |

| | |
|---|---|
| the REACH Chemical Safety Report | is potential for direct contact |
| | --- |
| Process category(ies) | PROC2 - Use in closed, continuous process with occasional controlled exposure |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 480 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Handle substance within a predominantly closed system provided with extract ventilation<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |
| | --- |
| Process category(ies) | PROC3 - Use in closed batch process (synthesis or formulation) |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 240 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |
| | --- |
| Process category(ies) | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 480 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |
| | --- |
| Process category(ies) | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 960 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond | Use chemically resistant face shield, goggles or safety glasses with side shields when there |

| | |
|---|---|
| the REACH Chemical Safety Report | is potential for direct contact<br>---------- |
| Process category(ies) | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 960 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact<br>---------- |
| Process category(ies) | PROC15 - Use as laboratory reagent |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 240 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact<br>---------- |
| **Control of consumer exposure** | Not intended for consumer use |

## Section 3 - Exposure estimation

**Environment**

**Environmental release category(ies)**

ERC1 - Manufacture of substances

Readily biodegradable in water, soil and sediments, both under aerobic and anaerobic conditions. Compared to other loss mechanisms identified, including volatilization and chemical degradation, biodegradation is expected to be the dominant process controlling the fate in the soil, groundwater, and surface water environments.

Degraded in the atmosphere by photochemical, hydroxyl-radical dependent reactions. The estimated elimination half-life is calculated to be about 17 days. Due to the high solubility in water and its low octanol-water partition coefficient adsorption to soil is considered to be negligible. Given the value of the Henry's Law constant, once in water, it is likely to remain in the aqueous phase. No bioaccumulation is expected.

Not classified as harmful, toxic or very toxic to aquatic life. Not classified as "may cause long lasting effects to aquatic life". Not a PBT or vPvB substance. Therefore not classified with respect to environmental effects.

**Predicted No Effect Concentration (PNEC)** - See values below

| | | | |
|---|---|---|---|
| **Fresh water** | 20.8 mg/l | **Marine water** | 2.08 mg/l |
| **Fresh water sediment** | 77 mg/kg | **Marine water sediment** | 7.7 mg/kg |
| **Water Intermittent** | 1540 mg/l | **Soil (Agriculture)** | 100 mg/kg |
| **Microorganisms in sewage treatment** | 100 mg/l | | |

**Health**

**Derived No Effect Level (DNEL)** - See table for values

| Route of exposure | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
|---|---|---|---|---|
| **Oral** | | | | |
| **Dermal** | | 20 mg/kg bw/d | | 20 mg/kg bw/day |
| **Inhalation** | 130 mg/m³ | 130 mg/m³ | 130 mg/m³ | 130 mg/m³ |

| Process category(ies) | Exposure route | Predicted exposure level | Risk characterization ratio (RCR) |
|---|---|---|---|
| PROC1 - Use in closed process, no likelihood of exposure | Worker - dermal | 0.034 mg/kg bw/d | <0.01 |
| | Worker - inhalative, long-term - systemic | 0.0133 mg/m³ | < 0.1 |
| | Worker - inhalative, short-term - systemic | 0.0534 mg/m³ | <0.01 |
| | Worker - combined, long-term - systemic | 0.036 mg/kg bw/d | < 0.1 |
| | Worker - combined, short-term - systemic | 0.0419 mg/kg bw/d | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal | 0.274 mg/kg bw/d | < 0.01 |
| | Worker - inhalative, long-term - systemic | 3.34 mg/m³ | < 0.1 |
| | Worker - inhalative, short-term - systemic | 13.35 mg/m³ | < 0.1 |
| | Worker - combined, long-term - systemic | 0.751 mg/kg bw/d | < 0.1 |
| | Worker - combined, short-term - systemic | 2.18 mg/kg bw/d | < 0.1 |
| PROC3 - Use in closed batch process (synthesis or formulation) | Worker - dermal | 0.137 mg/kg bw/d | < 0.01 |
| | Worker - inhalative, long-term - systemic | 6.675 mg/m³ | < 0.1 |
| | Worker - inhalative, short-term - systemic | 26.7 mg/m³ | 0.2 |
| | Worker - combined, long-term - systemic | 1.09 mg/kg bw/d | < 0.1 |
| | Worker - combined, short-term - systemic | 3.95 mg/kg bw/d | 0.212 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal | 1.37 mg/kg bw/d | < 0.1 |
| | Worker - inhalative, long-term - systemic | 33.38 mg/m³ | 0.256 |
| | Worker - inhalative, short-term - systemic | 53.4 mg/m³ | 0.41 |
| | Worker - combined, long-term - systemic | 7.511 mg/kg bw/d | 0.394 |
| | Worker - combined, short-term - systemic | 9 mg/kg bw/d | 0.479 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal | 2.743 mg/kg bw/d | 0.137 |
| | Worker - inhalative, long-term - systemic | 33.38 mg/m³ | 0.256 |
| | Worker - inhalative, short-term - systemic | 66.75 mg/m³ | 0.513 |
| | Worker - combined, long-term - systemic | 7.51 mg/kg bw/d | 0.393 |
| | Worker - combined, short-term - systemic | 12.28 mg/kg bw/d | 0.32 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated | Worker - dermal | 2.74 mg/kg bw/d | 0.137 |

| | | | |
|---|---|---|---|
| facilities | | | |
| | Worker - inhalative, long-term - systemic | 10.0 mg/m³ | < 0.1 |
| | Worker - inhalative, short-term - systemic | 20.02 mg/m³ | 0.15 |
| | Worker - combined, long-term - systemic | 4.17 mg/kg bw/d | 0.214 |
| | Worker - combined, short-term - systemic | 5.6 mg/kg bw/d | 0.291 |
| PROC15 - Use as laboratory reagent | Worker - dermal | 0.068 mg/kg bw/d | < 0.01 |
| | Worker - inhalative, long-term - systemic | 6.675 mg/m³ | < 0.1 |
| | Worker - inhalative, short-term - systemic | 13.351 mg/m³ | < 0.1 |
| | Worker - combined, long-term - systemic | 1.022 mg/kg bw/d | < 0.1 |
| | Worker - combined, short-term - systemic | 1.976 mg/kg bw/d | < 0.1 |

**Calculation method** Used ECETOC TRA model, Used Stoffenmanager model

**Remarks**
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

## Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)
Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
ECHA guidance for downstream users

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

# Methanol - Exposure Scenarios

| CAS No | REACH registration number | EC No |
|---|---|---|
| 67-56-1 | 01-2119433307-44-0232 | 200-659-6 |

## Exposure scenario

### ES2 Methanol Formulation and Repacking - ES2-F1 METHANOL

## Section 1 - Identification of the use

**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites

**Type** Worker

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

**Sector(s) of use**
SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**Process category(ies)**
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

**Environmental release category(ies)** ERC2 - Formulation of preparations (mixtures)
Readily biodegradable in water, soil and sediments, both under aerobic and anaerobic conditions. Compared to other loss mechanisms identified, including volatilization and chemical degradation, biodegradation is expected to be the dominant process controlling the fate in the soil, groundwater, and surface water environments.
Degraded in the atmosphere by photochemical, hydroxyl-radical dependent reactions. The estimated elimination half-life is calculated to be about 17 days. Due to the high solubility in water and its low octanol-water partition coefficient adsorption to soil is considered to be negligible. Given the value of the Henry's Law constant, once in water, it is likely to remain in the aqueous phase. No bioaccumulation is expected.
Not classified as harmful, toxic or very toxic to aquatic life. Not classified as "may cause long lasting effects to aquatic life". Not a PBT or vPvB substance. Therefore not classified with respect to environmental effects.

## Section 2 - Operational Conditions and Risk Management Measures

**Product characteristics**

| | |
|---|---|
| **Physical State** | Liquid |
| **pH** | 7-8 |
| **Water Solubility** | Miscible |
| **Vapor Pressure** | 23 hPa @ 20 °C |

Covers concentrations up to 100 %

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)**
ERC2 - Formulation of preparations (mixtures)
Readily biodegradable in water, soil and sediments, both under aerobic and anaerobic conditions. Compared to other loss mechanisms identified, including volatilization and chemical degradation, biodegradation is expected to be the dominant process controlling the fate in the soil, groundwater, and surface water environments.
Degraded in the atmosphere by photochemical, hydroxyl-radical dependent reactions. The estimated elimination half-life is calculated to be about 17 days. Due to the high solubility in water and its low octanol-water partition coefficient adsorption to soil is considered to be negligible. Given the value of the Henry's Law constant, once in water, it is likely to remain in the aqueous phase. No bioaccumulation is expected.
Not classified as harmful, toxic or very toxic to aquatic life. Not classified as "may cause long lasting effects to aquatic life". Not a PBT or vPvB substance. Therefore not classified with respect to environmental effects.

**Control of environmental exposure**
Readily biodegradable
Annual amount used in the EU Unspecified

**Environmental factors not influenced by risk management**

## Section 2.2 - Control of worker exposure

**General information on risk management related to physicochemical hazard**
Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Control entry to work area. Suitable fire detection system. Keep equipment under negative pressure. Check atmosphere for explosiveness and oxygen deficiencies. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

**Control of worker exposure**

| | |
|---|---|
| Process category(ies) | PROC1 - Use in closed process, no likelihood of exposure |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 240 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Undertake operation under enclosed conditions |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

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| | |
|---|---|
| Process category(ies) | PROC2 - Use in closed, continuous process with occasional controlled exposure |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 480 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Handle substance within a predominantly closed system provided with extract ventilation<br>Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |

| | |
|---|---|
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

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| | |
|---|---|
| Process category(ies) | PROC3 - Use in closed batch process (synthesis or formulation) |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 240 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

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| | |
|---|---|
| Process category(ies) | PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 480 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

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| | |
|---|---|
| Process category(ies) | PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 960 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

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| | |
|---|---|
| Process category(ies) | PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 960 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |

| | |
|---|---|
| health evaluation | |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |
| | --- |
| Process category(ies) | PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Use frequency | 5 days per week |
| Indoor/Outdoor use | Indoor |
| Covers skin contact area up to | 480 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear suitable gloves tested to EN374 (APF 5) 80% |
| | --- |
| Process category(ies) | PROC15 - Use as laboratory reagent |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 240 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |
| | --- |

**Control of consumer exposure** Not intended for consumer use

## Section 3 - Exposure estimation

**Environment**

**Environmental release category(ies)**

ERC2 - Formulation of preparations (mixtures)

Readily biodegradable in water, soil and sediments, both under aerobic and anaerobic conditions. Compared to other loss mechanisms identified, including volatilization and chemical degradation, biodegradation is expected to be the dominant process controlling the fate in the soil, groundwater, and surface water environments.

Degraded in the atmosphere by photochemical, hydroxyl-radical dependent reactions. The estimated elimination half-life is calculated to be about 17 days. Due to the high solubility in water and its low octanol-water partition coefficient adsorption to soil is considered to be negligible. Given the value of the Henry's Law constant, once in water, it is likely to remain in the aqueous phase. No bioaccumulation is expected.

Not classified as harmful, toxic or very toxic to aquatic life. Not classified as "may cause long lasting effects to aquatic life". Not a PBT or vPvB substance. Therefore not classified with respect to environmental effects.

**Predicted No Effect Concentration (PNEC)** - See values below

| | | | |
|---|---|---|---|
| **Fresh water** | 20.8 mg/l | **Marine water** | 2.08 mg/l |
| **Fresh water sediment** | 77 mg/kg | **Marine water sediment** | 7.7 mg/kg |
| **Water Intermittent** | 1540 mg/l | **Soil (Agriculture)** | 100 mg/kg |
| **Microorganisms in sewage treatment** | 100 mg/l | | |

**Health**

**Derived No Effect Level (DNEL)** - See table for values

| Route of exposure | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
|---|---|---|---|---|
| **Oral** | | | | |
| **Dermal** | | 20 mg/kg bw/d | | 20 mg/kg bw/day |
| **Inhalation** | 130 mg/m³ | 130 mg/m³ | 130 mg/m³ | 130 mg/m³ |

| Process category(ies) | Exposure route | Predicted exposure level | Risk characterization ratio (RCR) |
|---|---|---|---|
| PROC1 - Use in closed process, no likelihood of exposure | Worker - dermal | 0.0343 mg/kg bw/d | <0.01 |
| | Worker - inhalative, short-term - systemic | 0.0534 mg/m³ | <0.01 |
| | Worker - inhalative, long-term - systemic | 0.0133 mg/m³ | < 0.01 |
| | Worker - combined, short-term - systemic | 0.0419 mg/kg bw/d | < 0.01 |
| | Worker - combined, long-term - systemic | 0.036 mg/kg bw/d | < 0.01 |
| PROC2 - Use in closed, continuous process with occasional controlled exposure | Worker - dermal | 0.274 mg/kg bw/d | 0.014 |
| | Worker - inhalative, short-term - systemic | 13.35 mg/m³ | 0.103 |
| | Worker - inhalative, long-term - systemic | 3.34 mg/m³ | 0.025 |
| | Worker - combined, short-term - systemic | 2.18 mg/kg bw/d | 0.116 |
| | Worker - combined, long-term - systemic | 0.751 mg/kg bw/d | 0.039 |
| PROC3 - Use in closed batch process (synthesis or formulation) | Worker - dermal | 0.137 mg/kg bw/d | < 0.01 |
| | Worker - inhalative, short-term - systemic | 26.7 mg/m³ | 0.205 |
| | Worker - inhalative, long-term - systemic | 6.675 mg/m³ | 0.051 |
| | Worker - combined, short-term - systemic | 3.95 mg/kg bw/d | 0.212 |
| | Worker - combined, long-term - systemic | 1.09 mg/k bw/d | 0.058 |
| PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises | Worker - dermal | 1.37 mg/m³ | 0.068 |
| | Worker - inhalative, short-term - systemic | 53.4 mg/m³ | 0.41 |
| | Worker - inhalative, long-term - systemic | 13.35 mg/m³ | 0.103 |
| | Worker - combined, short-term - systemic | 9 mg/kg bw/d | 0.479 |
| | Worker - combined, long-term - systemic | 3.279 mg/kg bw/d | 0.17 |
| PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities | Worker - dermal | 2.743 mg/kg bw/d | 0.137 |
| | Worker - inhalative, short-term - systemic | 66.75 mg/m³ | 0.513 |
| | Worker - inhalative, long-term - systemic | 33.38 mg/m³ | 0.128 |
| | Worker - combined, short-term - systemic | 12.28 mg/kg bw/d | 0.65 |
| | Worker - combined, long-term - systemic | 7.51 mg/kg bw/d | 0.39 |
| PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated | Worker - dermal | 2.74 mg/kg bw/d | 0.137 |

| | | | |
|---|---|---|---|
| facilities | | | |
| | Worker - inhalative, short-term - systemic | 20.02 mg/m³ | 0.154 |
| | Worker - inhalative, long-term - systemic | 10.0 mg/m³ | 0.077 |
| | Worker - combined, short-term - systemic | 5.6 mg/kg bw/d | 0.29 |
| | Worker - combined, long-term - systemic | 4.17 mg/kg bw/d | 0.214 |
| PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) | Worker - dermal | 1.37 mg/kg dw/d | 0.068 |
| | Worker - inhalative, short-term - systemic | 53.40 mg/m³ | 0.41 |
| | Worker - inhalative, long-term - systemic | 26.70 mg/m³ | 0.205 |
| | Worker - combined, short-term - systemic | 9 mg/kg bw/d | 0.48 |
| | Worker - combined, long-term - systemic | 5.19 mg/kg bw/d | 0.274 |
| PROC15 - Use as laboratory reagent | Worker - dermal | 0.068 mg/kg bw/d | < 0.01 |
| | Worker - inhalative, short-term - systemic | 13.351 mg/m³ | 0.102 |
| | Worker - inhalative, long-term - systemic | 6.675 mg/m³ | 0.051 |
| | Worker - combined, short-term - systemic | 1.976 mg/kg bw/d | 0.106 |
| | Worker - combined, long-term - systemic | 1.022 mg/kg bw/d | 0.055 |

**Calculation method** Used ECETOC TRA model, Used Stoffenmanager model

**Remarks**
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

## Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)
Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
ECHA guidance for downstream users

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

# Methanol - Exposure Scenarios

| CAS No | REACH registration number | EC No |
|---|---|---|
| 67-56-1 | 01-2119433307-44-0232 | 200-659-6 |

## Exposure scenario

### ES3 Laboratory uses (Industrial) - ES3-L1 METHANOL

## Section 1 - Identification of the use

**Main user group** Industrial uses: Uses of substances as such or in preparations at industrial sites

**Type** Worker

**Processes, tasks, activities covered** Laboratory reagent and solvent involving transfer from larger to small containers and vice versa.

**Sector(s) of use** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

**Product category(ies)** PC21 - Laboratory chemicals

**Process category(ies)** PROC10 - Roller application or brushing
PROC15 - Use as laboratory reagent

**Environmental release category(ies)** ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

## Section 2 - Operational Conditions and Risk Management Measures

**Product characteristics**

**Physical State** Liquid
**pH** 7-8
**Water Solubility** Miscible
**Vapor Pressure** 23 hPa @ 20 °C
Covers concentrations up to 100 %

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)**
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

**Control of environmental exposure**
Readily biodegradable
Annual amount used in the EU Unspecified

**Environmental factors not influenced by risk management**

## Section 2.2 - Control of worker exposure

**General information on risk management related to physicochemical hazard**
Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Control entry to work area. Suitable fire detection system. Keep equipment under negative pressure. Check atmosphere for explosiveness and oxygen deficiencies. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

**Control of worker exposure**

| | |
|---|---|
| Process category(ies) | PROC10 - Roller application or brushing |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | < =40C |
| Covers skin contact area up to | 480 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

| | |
|---|---|
| Process category(ies) | PROC15 - Use as laboratory reagent |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 240 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

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**Control of consumer exposure** Not intended for consumer use

## Section 3 - Exposure estimation

**Environment**
**Environmental release category(ies)**
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

**Predicted No Effect Concentration (PNEC)** - See values below

| | | | |
|---|---|---|---|
| **Fresh water** | 20.8 mg/l | **Marine water** | 2.08 mg/l |
| **Fresh water sediment** | 77 mg/kg | **Marine water sediment** | 7.7 mg/kg |
| **Water Intermittent** | 1540 mg/l | **Soil (Agriculture)** | 100 mg/kg |
| **Microorganisms in sewage treatment** | 100 mg/l | | |

**Health**

**Derived No Effect Level (DNEL)** - See table for values

| Route of exposure | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
|---|---|---|---|---|
| **Oral** | | | | |
| **Dermal** | | 20 mg/kg bw/d | | 20 mg/kg bw/day |

| | | | | |
|---|---|---|---|---|
| **Inhalation** | 130 mg/m³ | 130 mg/m³ | 130 mg/m³ | 130 mg/m³ |

| Process category(ies) | Exposure route | Predicted exposure level | Risk characterization ratio (RCR) |
|---|---|---|---|
| PROC10 - Roller application or brushing | Worker - dermal, long-term - systemic | 4.39 mg/kg bw/d | 0.22 |
| | Worker - inhalative, long-term - systemic | 26.7 mg/m³ | 0.205 |
| | Worker - combined, long-term - systemic | 8.2 mg/kg bw/d | 0.425 |
| | Worker - dermal, short-term - systemic | 4.39 mg/kg bw/d | 0.22 |
| | Worker - inhalative, short-term - systemic | 53.4 mg/m³ | 0.411 |
| | Worker - combined, short-term - systemic | 12.02 mg/kg bw/d | 0.63 |
| PROC15 - Use as laboratory reagent | Worker - dermal, long-term - systemic | 0.068 mg/kg bw/d | < 0.01 |
| | Worker - inhalative, long-term - systemic | 6.675 mg/m³ | 0.051 |
| | Worker - combined, long-term - systemic | 1.022 mg/kg bw/d | 0.055 |
| | Worker - dermal, short-term - systemic | 0.0685 mg/kg bw/d | < 0.01 |
| | Worker - inhalative, short-term - systemic | 13.351 mg/m³ | 0.102 |
| | Worker - combined, short-term - systemic | 1.976 mg/kg bw/d | 0.106 |

**Calculation method** Used ECETOC TRA model, Used Stoffenmanager model

**Remarks**
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

## Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)
Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
ECHA guidance for downstream users

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

# Methanol - Exposure Scenarios

| CAS No | REACH registration number | EC No |
|---|---|---|
| 67-56-1 | 01-2119433307-44-0232 | 200-659-6 |

## Exposure scenario

### ES4 Laboratory uses (Professional) - ES4-L2 METHANOL

## Section 1 - Identification of the use

**Main user group** Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**Type** Worker

**Processes, tasks, activities covered** Laboratory reagent and solvent involving transfer from larger to small containers and vice versa.

**Sector(s) of use** SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**Product category(ies)** PC21 - Laboratory chemicals

**Process category(ies)** PROC10 - Roller application or brushing
PROC15 - Use as laboratory reagent

**Environmental release category(ies)** ERC8a - Wide dispersive indoor use of processing aids in open systems

## Section 2 - Operational Conditions and Risk Management Measures

**Product characteristics**

**Physical State** Liquid
**pH** 7-8
**Water Solubility** Miscible
**Vapor Pressure** 23 hPa @ 20 °C
Covers concentrations up to 100 %

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)**
ERC8a - Wide dispersive indoor use of processing aids in open systems

**Control of environmental exposure**
Readily biodegradable
Annual amount used in the EU Unspecified

**Environmental factors not influenced by risk management**

## Section 2.2 - Control of worker exposure

**General information on risk management related to physicochemical hazard**
Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Control entry to work area. Suitable fire detection system. Keep equipment under negative pressure. Check atmosphere for explosiveness and oxygen deficiencies. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

**Control of worker exposure**

| | |
|---|---|
| Process category(ies) | PROC10 - Roller application or brushing |
| Covers concentrations up to | <=5% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | < =40C |
| Covers skin contact area up to | 960 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 90% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

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| | |
|---|---|
| Process category(ies) | PROC15 - Use as laboratory reagent |
| Covers concentrations up to | 100% |
| Exposure duration | >4 hours (default) |
| Indoor/Outdoor use | Indoor |
| Assumes process temperature up to | <=40°C |
| Covers skin contact area up to | 240 cm2 |
| Technical conditions and measures to control dispersion from source towards the worker | Local exhaust ventilation - efficiency of at least 80% |
| Conditions and measures related to personal protection, hygiene and health evaluation | Wear gloves according to EN374 resistant to the solvent(s) in use (APF 5) 80% |
| Additional good practice advice beyond the REACH Chemical Safety Report | Use chemically resistant face shield, goggles or safety glasses with side shields when there is potential for direct contact |

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**Control of consumer exposure** Not intended for consumer use

## Section 3 - Exposure estimation

**Environment**
**Environmental release category(ies)**
ERC8a - Wide dispersive indoor use of processing aids in open systems

**Predicted No Effect Concentration (PNEC)** - See values below

| | | | |
|---|---|---|---|
| **Fresh water** | 20.8 mg/l | **Marine water** | 2.08 mg/l |
| **Fresh water sediment** | 77 mg/kg | **Marine water sediment** | 7.7 mg/kg |
| **Water Intermittent** | 1540 mg/l | **Soil (Agriculture)** | 100 mg/kg |
| **Microorganisms in sewage treatment** | 100 mg/l | | |

**Health**

**Derived No Effect Level (DNEL)** - See table for values

| Route of exposure | Acute effects (local) | Acute effects (systemic) | Chronic effects (local) | Chronic effects (systemic) |
|---|---|---|---|---|
| **Oral** | | | | |
| **Dermal** | | 20 mg/kg bw/d | | 20 mg/kg bw/day |
| **Inhalation** | 130 mg/m³ | 130 mg/m³ | 130 mg/m³ | 130 mg/m³ |

| Process category(ies) | Exposure route | Predicted exposure level | Risk characterization ratio (RCR) |
|---|---|---|---|
| PROC10 - Roller application or brushing | Worker - dermal | 0.284 mg/kg bw/d | 0.014 |
| | Worker - inhalative, long-term - systemic | 33.4 mg/m³ | 0.257 |
| | Worker - combined, long-term - systemic | 5.04 mg/kg bw/d | 0.27 |
| | Worker - inhalative, short-term - systemic | 66.75 mg/m³ | 0.514 |
| | Worker - combined, short-term - systemic | 9.811 mg/kg bw/d | 0.527 |
| PROC15 - Use as laboratory reagent | Worker - dermal | 0.068 mg/kg bw/d | < 0.01 |
| | Worker - inhalative, long-term - systemic | 13.35 mg/m³ | 0.102 |
| | Worker - combined, long-term - systemic | 1.98 mg/kg bw/d | 0.106 |
| | Worker - inhalative, short-term - systemic | 26.7 mg/m³ | 0.205 |
| | Worker - combined, short-term - systemic | 3.88 mg/kg bw/d | 0.209 |

**Calculation method** Used ECETOC TRA model, Used Stoffenmanager model

**Remarks**
Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

## Section 4 - Guidance to check compliance with the exposure scenario

Used ECETOC TRA model
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html)
Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented
ECHA guidance for downstream users