SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

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 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 ERC2 - Formulation of preparations (mixtures) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC8a - Wide dispersive indoor use of processing aids in open systems
Uses advised against	SU21 - Consumer uses: Private households (= general public = consumers) PC13 - Fuels REACH Annex XVII Restriction - refer to SECTION 15

1.3. Details of the supplier of the safety data sheet

Company

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

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

Swiss distributor - Fisher Scientific AG
Neuhofstrasse 11, CH 4153 Reinach
Tel: +41 (0) 56 618 41 11
e-mail - infoch@thermofisher.com

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
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

customers in Switzerland:
Tox Info Suisse Emergency Number: **145 (24hr)**
Tox Info Suisse: +41-44 251 51 51 (Emergency number from abroad)
Chemtrec (24h) Toll-Free: 0800 564 402
Chemtrec Local: +41-43 508 20 11 (Zurich)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

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 - Regulation (EC) No 1272/2008
Methanol	67-56-1	200-659-6	>95	Flam. Liq. 2 (H225) Acute Tox. 3 (H301) Acute Tox. 3 (H311) Acute Tox. 3 (H331) STOT SE 1 (H370)

Component	Specific concentration limits (SCL's)	M-Factor	Component notes
Methanol	STOT Single Exp. 1 :: >= 10 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, Forth edition. Published 2020. **IRE -** 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority. **CH** - The Government of Switzerland has set a directive on limit values for working materials (Grenzwerte am Arbeitsplatz) which is based on the Swiss Federal Regulation "Verordnung über die Verhütung von Unfällen und Berufskrankheiten". This directive is administered, periodically revised and enforced by SUVA (Swiss National Accident Insurance Fund).

Component	European Union	The United Kingdom	France	Belgium	Spain
Methanol	TWA: 200 ppm 8 hr TWA: 260 mg/m³ 8 hr Skin	WEL - TWA: 200 ppm TWA; 266 mg/m³ TWA WEL - STEL: 250 ppm STEL; 333 mg/m³ STEL	TWA / VME: 200 ppm (8 heures). restrictive limit TWA / VME: 260 mg/m³ (8 heures). restrictive limit STEL / VLCT: 1000 ppm. restrictive limit STEL / VLCT: 1300 mg/m³. restrictive limit Peau	TWA: 200 ppm 8 uren TWA: 266 mg/m³ 8 uren STEL: 250 ppm 15 minuten STEL: 333 mg/m³ 15 minuten Huid	TWA / VLA-ED: 200 ppm (8 horas) TWA / VLA-ED: 266 mg/m³ (8 horas) Piel

Component	Italy	Germany	Portugal	The Netherlands	Finland
Methanol	TWA: 200 ppm 8 ore. Time Weighted Average TWA: 260 mg/m³ 8 ore. Time Weighted Average Pelle	100 ppm TWA MAK; 130 mg/m³ TWA MAKSkin absorber	STEL: 250 ppm 15 minutos TWA: 200 ppm 8 horas TWA: 260 mg/m³ 8 horas Pele	huid TWA: 133 mg/m³ 8 uren	TWA: 200 ppm 8 tunteina TWA: 270 mg/m³ 8 tunteina STEL: 250 ppm 15 minuutteina STEL: 330 mg/m³ 15 minuutteina Iho

Component	Austria	Denmark	Switzerland	Poland	Norway
Methanol	Haut MAK-KZGW: 800 ppm 15 Minuten MAK-KZGW: 1040 mg/m³ 15 Minuten MAK-TMW: 200 ppm 8 Stunden MAK-TMW: 260 mg/m³ 8 Stunden	TWA: 200 ppm 8 timer TWA: 260 mg/m³ 8 timer STEL: 400 ppm 15 minutter STEL: 520 mg/m³ 15 minutter Hud	Haut/Peau STEL: 400 ppm 15 Minuten STEL: 520 mg/m³ 15 Minuten TWA: 200 ppm 8 Stunden TWA: 260 mg/m³ 8 Stunden	STEL: 300 mg/m³ 15 minutach TWA: 100 mg/m³ 8 godzinach	TWA: 100 ppm 8 timer TWA: 130 mg/m³ 8 timer STEL: 150 ppm 15 minutter. value calculated STEL: 162.5 mg/m³ 15 minutter. value calculated Hud

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
Methanol	TWA: 200 ppm TWA: 260.0 mg/m³ Skin notation	kože TWA-GVI: 200 ppm 8 satima. TWA-GVI: 260 mg/m³ 8 satima.	TWA: 200 ppm 8 hr. TWA: 260 mg/m³ 8 hr. STEL: 600 ppm 15 min STEL: 780 mg/m³ 15 min Skin	Skin-potential for cutaneous absorption TWA: 200 ppm TWA: 260 mg/m³	TWA: 250 mg/m³ 8 hodinách. Potential for cutaneous absorption Ceiling: 1000 mg/m³

Component	Estonia	Gibraltar	Greece	Hungary	Iceland
Methanol	Nahk TWA: 200 ppm 8 tundides. TWA: 250 mg/m³ 8 tundides. STEL: 250 ppm 15 minutites. STEL: 350 mg/m³ 15 minutites.	Skin notation TWA: 200 ppm 8 hr TWA: 260 mg/m³ 8 hr	skin - potential for cutaneous absorption STEL: 250 ppm STEL: 325 mg/m³ TWA: 200 ppm TWA: 260 mg/m³	TWA: 260 mg/m³ 8 órában. AK lehetséges borön keresztüli felszívódás	TWA: 200 ppm 8 klukkustundum. TWA: 260 mg/m³ 8 klukkustundum. Skin notation Ceiling: 400 ppm Ceiling: 520 mg/m³

Component	Latvia	Lithuania	Luxembourg	Malta	Romania
Methanol	skin - potential for cutaneous exposure TWA: 200 ppm TWA: 260 mg/m³	TWA: 200 ppm IPRD TWA: 260 mg/m³ IPRD Oda	Possibility of significant uptake through the skin TWA: 200 ppm 8 Stunden TWA: 260 mg/m³ 8 Stunden	possibility of significant uptake through the skin TWA: 200 ppm TWA: 260 mg/m³	Skin notation TWA: 200 ppm 8 ore TWA: 260 mg/m³ 8 ore

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
Methanol	TWA: 5 mg/m³ 1250 Skin notation MAC: 15 mg/m³	Potential for cutaneous absorption TWA: 200 ppm TWA: 260 mg/m³	TWA: 200 ppm 8 urah TWA: 260 mg/m³ 8 urah Kožа STEL: 800 ppm 15 minutah STEL: 1040 mg/m³ 15 minutah	Indicative STEL: 250 ppm 15 minuter Indicative STEL: 350 mg/m³ 15 minuter TLV: 200 ppm 8 timmar. NGV TLV: 250 mg/m³ 8 timmar. NGV Hud	Deri TWA: 200 ppm 8 saat TWA: 260 mg/m³ 8 saat

Biological limit values

List source(s):

Component	European Union	United Kingdom	France	Spain	Germany
Methanol			Methanol: 15 mg/L urine end of shift	Methanol: 15 mg/L urine end of shift	Methanol: 15 mg/L urine (end of shift) Methanol: 15 mg/L urine (for long-term exposures: at the end of the shift after several shifts)

Component	Italy	Finland	Denmark	Bulgaria	Romania
Methanol					Methanol: 6 mg/L urine end of shift

Component	Gibraltar	Latvia	Slovak Republic	Luxembourg	Turkey
Methanol			Methanol: 30 mg/L urine		

			end of exposure or work shift Methanol: 30 mg/L urine after all work shifts for long-term exposure		

Monitoring methods
BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
MDHS70 General methods for sampling airborne gases and vapours
MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography
MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

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)
Methanol 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)
Methanol 67-56-1 (>95)	DNEL = 130mg/m^3	DNEL = 130mg/m^3	DNEL = 130mg/m^3	DNEL = 130mg/m^3

Predicted No Effect Concentration (PNEC)
See values below.

Component	Fresh water	Fresh water sediment	Water Intermittent	Microorganisms in sewage treatment	Soil (Agriculture)
Methanol 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
Methanol 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. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) 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. 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% **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**	
Methanol	-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
Methanol	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
Methanol 67-56-1 (>95)	OECD Test Guideline 406 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
Methanol 67-56-1 (>95)	OECD Test Guideline 416	Rat / Inhalation 2 Generation	NOAEC = 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
Methanol	Pimephales promelas: LC50 > 10000 mg/L 96h	EC50 > 10000 mg/L 24h	

Component	Microtox	M-Factor
Methanol	EC50 = 39000 mg/L 25 min EC50 = 40000 mg/L 15 min EC50 = 43000 mg/L 5 min	

12.2. Persistence and degradability

Readily biodegradable

Persistence Persistence is unlikely, based on information available.

Component	Degradability

Methanol 67-56-1 (>95)	DT50 ~ 17.2d >94% after 20d

12.3. Bioaccumulative potential Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Methanol	-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.

Switzerland - Waste Ordinance Disposal should be in accordance with applicable regional, national and local laws and regulations. Ordinance on the Avoidance and the Disposal of Waste (Waste Ordinance, ADWO) SR 814.600
https://www.fedlex.admin.ch/eli/cc/2015/891/en

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
Methanol	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
Methanol	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)
Methanol	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
Methanol	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
Methanol	WGK 2	Class I : 20 mg/m³ (Massenkonzentration)

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

Swiss Regulations
Article 4 para. 4 of the Ordinance on the protection of young people in the workplace (SR 822.115) and Article 1 lit. f of the EAER regulation on hazardous work and young people (SR 822.115.2).
Take note on Article 13 Maternity Ordinance (SR 822.111.52) with regards expectant and nursing mothers.

Component	Switzerland - Ordinance on the Reduction of Risk from handling of hazardous substances preparation (SR 814.81)	Switzerland - Ordinance on Incentive Taxes on Volatile Organic Compounds (OVOC)	Switzerland - Ordinance of the Rotterdam Convention on the Prior Informed Consent Procedure
Methanol 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 the requirements of Regulation (EC) No. 1907/2006. COMMISSION REGULATION (EU) 2020/878 amending Annex II to Regulation (EC) No 1907/2006 .

For Switzerland - Compiled in accordance with the technical provisions referred to in Annex 2, Number 3, ChemO (SR 813.11 - Ordinance on Protection against Dangerous Substances and Preparations).

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	169 hPa @ 25 °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
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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 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	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)	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 ----------
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)

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	169 hPa @ 25 °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 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
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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
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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 169 hPa @ 25 °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 169 hPa @ 25 °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