

Creation Date 27-Jan-2010

Revision Date 17-Dec-2020

Revision Number 12

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

1.1. Product identifier

Product Description: Dichloromethane
Cat No. : 383780000; 383780010; 383780025; 383780050; 383780250
Synonyms Dichloromethane; DCM
CAS-No 75-09-2
EC-No. 200-838-9
Molecular Formula C H₂ Cl₂
Reach Registration Number -

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
Product category PC21 - Laboratory chemicals
Process categories PROC15 - Use as a laboratory reagent
Environmental release category ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Uses advised against 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
 Acros Organics BVBA
 Janssen Pharmaceuticaaan 3a
 2440 Geel, Belgium

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-ACROS-01 / **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

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

Based on available data, the classification criteria are not met

Health hazards

Skin Corrosion/Irritation	Category 2 (H315)
Serious Eye Damage/Eye Irritation	Category 2 (H319)
Carcinogenicity	Category 2 (H351)
Specific target organ toxicity - (single exposure)	Category 3 (H336)

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

Warning

Hazard Statements

H315 - Causes skin irritation
H319 - Causes serious eye irritation
H336 - May cause drowsiness or dizziness
H351 - Suspected of causing cancer

Precautionary Statements

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P337 + P313 - If eye irritation persists: Get medical advice/attention
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P312 - Call a POISON CENTER or doctor/physician if you feel unwell
P280 - Wear protective gloves/protective clothing/eye protection/face protection

2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)
Causes formation of carbon monoxide in the blood. Carbon monoxide may cause adverse effects on the cardiovascular system and the central nervous system
Toxic to terrestrial vertebrates

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Methylene chloride	75-09-2	EEC No. 200-838-9	>99.5	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H336)

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

				Carc. 2 (H351)
--	--	--	--	----------------

Note

Stabilised with Amylene (CAS 513-35-9)

Reach Registration Number	-
----------------------------------	---

Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice	If symptoms persist, call a physician.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
Ingestion	Clean mouth with water and drink afterwards plenty of water.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
Self-Protection of the First Aider	Use personal protective equipment as required.

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

. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Causes central nervous system depression: Continued or high exposures by inhalation will cause anaesthetic effects. This may result in a loss of consciousness and could prove fatal: Causes formation of carbon monoxide in the blood. Carbon monoxide may cause adverse effects on the cardiovascular system and the central nervous system

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.

Extinguishing media which must not be used for safety reasons

No information available.

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

Hazardous Combustion Products

Carbon monoxide (CO), Carbon dioxide (CO₂), Phosgene, Hydrogen chloride gas.

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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment as required. Ensure adequate ventilation. Avoid breathing vapors or mists. Wear respiratory protection.

6.2. Environmental precautions

Should not be released into the environment.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

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 get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Vapors are heavier than air and may spread along floors. Handle product only in closed system or provide appropriate exhaust ventilation. Reacts with aluminum and its alloys.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store in aluminum containers.

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

Class 6.1D

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, Third edition. Published 2018. **IRE** - 2018 Code of Practice for the Chemical Agents Regulations, Schedule

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

1. Published by the Health and Safety Authority

Component	The United Kingdom	European Union	Ireland
Methylene chloride	STEL: 200 ppm 15 min STEL: 706 mg/m ³ 15 min TWA: 353 mg/m ³ 8 hr TWA: 100 ppm 8 hr Skin	TWA: 353 mg/m ³ (15min) TWA: 100 ppm (15min) STEL: 706 mg/m ³ (8h) STEL: 200 ppm (8h) Skin	TWA: 100 ppm 8 hr. TWA: 353 mg/m ³ 8 hr. STEL: 200 ppm 15 min STEL: 706 mg/m ³ 15 min Skin

Biological limit values

List source(s): **UK** - Biological Monitoring Guidance Values provided by the UK's Health and Safety Executive (HSE) Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended) and EH40/2005.

Component	United Kingdom	European Union
Methylene chloride	Carbon monoxide: 30 ppm end-tidal breath post shift	

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) No information available

<u>Route of exposure</u>	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal				12 mg/kg bw/d
Inhalation	706 mg/m ³		353 mg/m ³	

Predicted No Effect Concentration (PNEC) Predicted No Effect Concentration (PNEC).

Fresh water	0.31 mg/l
Fresh water sediment	2.57 mg/kg dw
Marine water	0.031 mg/l
Marine water sediment	0.26 mg/kg dw
Water Intermittent	0.27 mg/l
Microorganisms in sewage treatment	25.9 mg/l
Soil (Agriculture)	0.33 mg/kg dw

8.2. Exposure controls

Engineering Measures

Use only under a chemical fume hood. 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 Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Viton (R)	See manufacturers	-		(minimum requirement)

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

recommendations

EN 374

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 compatibility, 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	sweet	
Odor Threshold	No data available	
Melting Point/Range	-97 °C / -142.6 °F	
Softening Point	No data available	
Boiling Point/Range	39 °C / 102.2 °F	
Flammability (liquid)	No data available	
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	Lower 13 vol% Upper 22 vol%	
Flash Point	No information available	Method - No information available
Autoignition Temperature	556 - °C / 1032.8 - °F	
Decomposition Temperature	No data available	
pH	No information available	
Viscosity	0.42 mPas @ 25°C	
Water Solubility	20 g/L (20°C)	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		
Component	log Pow	
Methylene chloride	1.25	
Vapor Pressure	350 mbar @ 20°C	
Density / Specific Gravity	1.33	
Bulk Density	Not applicable	Liquid
Vapor Density	2.93 (Air = 1.0)	(Air = 1.0)

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

Particle characteristics Not applicable (liquid)

9.2. Other information

Molecular Formula C H₂ Cl₂
Molecular Weight 84.93

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity None known, based on information available

10.2. Chemical stability Stable under normal conditions, Decomposes on exposure to light.

10.3. Possibility of hazardous reactions

Hazardous Polymerization Hazardous polymerization does not occur.
Hazardous Reactions Forms a detonable mixture with nitric acid.

10.4. Conditions to avoid Excess heat. Protect from direct sunlight.

10.5. Incompatible materials Strong oxidizing agents. Strong acids. Amines.

10.6. Hazardous decomposition products Carbon monoxide (CO). Carbon dioxide (CO₂). Phosgene. Hydrogen chloride gas.

SECTION 11: TOXICOLOGICAL INFORMATION

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

Product Information

(a) acute toxicity;
Oral Based on available data, the classification criteria are not met
Dermal Based on available data, the classification criteria are not met
Inhalation Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Methylene chloride	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rat)	53 mg/L (Rat) 6 h 76000 mg/m ³ (Rat) 4 h

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 2

(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

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

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

Mutagenic effects have occurred in microorganisms

(f) carcinogenicity;

Category 2

The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	EU	UK	Germany	IARC
Methylene chloride				Group 2A

(g) reproductive toxicity;

Based on available data, the classification criteria are not met

(h) STOT-single exposure;

Category 3

Results / Target organs

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

Other Adverse Effects

Tumorigenic effects have been reported in experimental animals.

Symptoms / effects, both acute and delayed

Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Causes central nervous system depression. Continued or high exposures by inhalation will cause anaesthetic effects. This may result in a loss of consciousness and could prove fatal. Causes formation of carbon monoxide in the blood. Carbon monoxide may cause adverse effects on the cardiovascular system and the central nervous system.

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
Methylene chloride	Pimephales promelas: LC50:193 mg/L/96h	EC50: 140 mg/L/48h	EC50:>660 mg/L/96h

Component	Microtox	M-Factor
Methylene chloride	EC50: 1 mg/L/24 h EC50: 2.88 mg/L/15 min	

12.2. Persistence and degradability

Persistence

Persistence is unlikely, based on information available.

12.3. Bioaccumulative potential

Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Methylene chloride	1.25	6.4 - 40 OECD 305C

ACR38378

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

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.

12.5. Results of PBT and vPvB assessment

Substance is not considered persistent, bioaccumulative and toxic (PBT) / 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** **Ozone Depletion Potential**

This product does not contain any known or suspected substance.

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.

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 empty into drains.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number

UN1593

14.2. UN proper shipping name

Dichloromethane

14.3. Transport hazard class(es)

6.1

14.4. Packing group

III

ADR

14.1. UN number

UN1593

14.2. UN proper shipping name

Dichloromethane

14.3. Transport hazard class(es)

6.1

14.4. Packing group

III

IATA

14.1. UN number

UN1593

14.2. UN proper shipping name

Dichloromethane

14.3. Transport hazard class(es)

6.1

14.4. Packing group

III

14.5. Environmental hazards

No hazards identified

14.6. Special precautions for user

No special precautions required

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

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

X = listed, Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), China (IECSC), Japan (ENCS), Australia (AICS), Korea (ECL).

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	IECSC	AICS	KECL
Methylene chloride	200-838-9	-		X	X	-	X	X	X	X	KE-2389 3

Note

Stabilised with Amylene (CAS 513-35-9)

Component	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)
Methylene chloride		Use restricted. See item 59. (see http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006R1907:EN:NOT for restriction details)	

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

National Regulations

WGK Classification

See table for values

Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
Methylene chloride	WGK2	Class I : 20 mg/m ³ (Massenkonzentration)

Component	France - INRS (Tables of occupational diseases)
Methylene chloride	Tableaux des maladies professionnelles (TMP) - RG 12

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

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted

SECTION 16: OTHER INFORMATION

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

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H336 - May cause drowsiness or dizziness

H351 - Suspected of causing cancer

Legend

SAFETY DATA SHEET

Dichloromethane

Revision Date 17-Dec-2020

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/NDL - 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.

Creation Date	27-Jan-2010
Revision Date	17-Dec-2020
Revision Summary	Update to CLP Format.

**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**

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]

Dichloromethane - Exposure Scenarios

CAS-No 75-09-2	Reach Registration Number 01-2119480404-41-xxxx	EC-No. 200-838-9
--------------------------	---	----------------------------

Exposure Scenarios Overview				
Title	Sector of use	Process category(ies)	Environmental release category	ES Identifier
Manufacture, Recycling and Distribution (Industrial)	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 8a, 8b, 9	ERC1 - Manufacture of substances	ES1-M1 DCM
Use as a process solvent / extraction medium	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU5 - Manufacture of textiles, leather, fur SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 10, 15	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles	ES2-M2 DCM
Formulation of preparations and/or re-packaging	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)	3, 4, 5, 8a, 8b, 9, 15	ERC2 - Formulation of preparations	ES4-F1 DCM
Laboratory use	SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen) SU24 - Scientific research and development	10, 15	ERC8a - Wide dispersive indoor use of processing aids in open systems	ES5-L1 DCM

Exposure scenario

Methylene chloride - ES1-M1 DCM

Section 1 - Identification of the use

Main user group	Industrial use
Type	Worker
Processes, tasks, activities covered	Manufacture; Includes recycling / recovery; 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

	SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals
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) ERC1 - Manufacture of substances

Section 2 - Operational Conditions and Risk Management Measures

Product characteristics

Physical State	Liquid
pH	No information available
Water Solubility	Partially miscible; 13.2 g/L @ 25 °C
Vapor Pressure	325 mmHg @ 20°C
Volatility	High
Covers concentrations up to 100 %	

Section 2.1 - Control of environmental exposure

Environmental release category(ies)

ERC1 - Manufacture of substances

Control of environmental exposure

Readily biodegradable
Annual amount used in the EU 103000 t/a
Annual amount per site 25700 t/a

Environmental factors not influenced by risk management

Emission days	300
Receiving water dilution (fresh or marine)	18000 m3/d

Other operational conditions of use affecting environmental exposure

Emission days	300 (from ESVOC SPERC 1.1.v1)
Release fraction to air from process (initial release prior to RMM)	0.0000596
Release fraction to wastewater from process (initial release prior to RMM)	0.0000369
Release fraction to soil from process (initial release prior to RMM)	0.0

Technical onsite conditions and measures to reduce or limit discharges, air emissions

Technical onsite conditions and measures to reduce or limit discharges, air emissions
Negligible air emissions as process operates in a contained system.
Additional good practice advice beyond the REACH Chemical Safety Report
Bund storage facilities to prevent soil and water pollution in the event of spillage. Ensure all waste water is collected and treated via a WWTP.

Conditions and measures related to municipal sewage treatment plant

Remarks Manufacturing plants will have on-site waste water treatment facilities and emission to the municipal STP will not occur.

Waste management

Air	No discharge. No air emission controls required.
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.5%

Conditions and measures related to external treatment of waste for disposal

Disposal	Waste resulting from on-site RMM to be disposed as chemical waste
Waste treatment methods	Hazardous waste incineration

Section 2.2 - Control of worker exposure**General information on risk management related to physicochemical hazard**

Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Manufactured and processed at industrial sites in closed continuous processes with either no likelihood of exposure or with only occasional opportunity for exposure in controlled conditions e.g. during maintenance, sampling or discharge of the material. Transfer of the substance is conducted at dedicated facilities using a closed-system with vapour return. Respiratory protection is not required except for certain critical activities where respiratory protective equipment is used, for example, cleaning tanks or reactors. Measured dermal exposure data are not available.

Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100%
Amounts used	>1000 t/y
Exposure duration	< 8h hour(s)
Use frequency	220 days per year
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a closed system Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100%
Exposure duration	< 8h hour(s)
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a closed system Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator providing a minimum efficiency of 90% (APF 10) Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Exposure duration	< 8 hour(s)
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent	Handle substance within a predominantly closed system provided with extract ventilation

/limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90% (APF 10)
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	100%
Exposure duration	< 8h hour(s)
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Provide extract ventilation to points where emissions occur Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 90% (APF 10) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
Covers concentrations up to	vessels/large containers at non dedicated facilities
Exposure duration	100%
Indoor/Outdoor use	< 1 hour(s)
Assumes process temperature up to	Indoor
Organisational measures to prevent /limit releases, dispersion and exposure	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Drain or remove substance from equipment prior to break-in or maintenance Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Additional good practice advice beyond the REACH Chemical Safety Report	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 95% (APF 20) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Assumes a good basic standard of occupational hygiene is implemented -----
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
Covers concentrations up to	vessels/large containers at dedicated facilities
Exposure duration	100%
Indoor/Outdoor use	< 8h hour(s)
Assumes process temperature up to	Indoor
Organisational measures to prevent /limit releases, dispersion and exposure	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Fill containers/cans at dedicated fill points supplied with local extract ventilation Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Additional good practice advice beyond the REACH Chemical Safety Report	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training -----

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	100%
Exposure duration	< 8h hour(s)
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Fill containers/cans at dedicated fill points supplied with local extract ventilation Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90%
Additional good practice advice beyond the REACH Chemical Safety Report	Assumes a good basic standard of occupational hygiene is implemented

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	100%
Exposure duration	< 8h hour(s)
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Assumes a good basic standard of occupational hygiene is implemented

Control of consumer exposure Not intended for consumer use

Section 3 - Exposure estimation

Environment

Environmental release category(ies)

ERC1 - Manufacture of substances

Predicted No Effect Concentration (PNEC) - See values below

Fresh water	0.31 mg/l	Marine water	0.031 mg/l
Fresh water sediment	2.57 mg/kg dw	Marine water sediment	0.26 mg/kg dw
Water Intermittent	0.27 mg/l	Soil (Agriculture)	0.33 mg/kg dw
Microorganisms in sewage treatment	25.9 mg/l		

<u>Environment</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
Freshwater	5.17 x 10 ⁻³ mg/l	<0.01
Marine water	9.3 x 10 ⁻³ mg/l	<0.01
Freshwater sediment	4.16 x 10 ⁻⁴ mg/kg dw	<0.01
Marine sediment	7.49 x 10 ⁻⁴ mg/kg dw	<0.01
Soil	1.26 x 10 ⁻⁴ mg/kg dw	<0.01
Calculation method - EUSES 2.1		

Remarks

No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment. All derived PECs are below the relevant PNEC and so no further assessment or refinements are required.

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

<u>Route of exposure</u>	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				
Dermal				12 mg/kg bw/d
Inhalation	706 mg/m ³		353 mg/m ³	

Process category(ies)	Exposure route	Predicted exposure level	Risk characterization ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative	0.01 ppm	<0.01
	Worker - dermal	0.07 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative	50 ppm	0.5
	Worker - dermal	0.27 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative	10 ppm	0.1
	Worker - dermal	1.37 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative	10 ppm	0.1
	Worker - dermal	1.37 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative	50 ppm	0.5
	Worker - dermal	2.74 mg/kg bw/day	< 0.01
PROC15 - Use as laboratory reagent	Worker - inhalative	50 ppm	0.5
	Worker - dermal	0.07 mg/kg bw/d	< 0.01

Calculation method - Used ECETOC TRA 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 EUSES model

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]

Dichloromethane - Exposure Scenarios

CAS-No 75-09-2	Reach Registration Number 01-2119480404-41-xxxx	EC-No. 200-838-9
--------------------------	---	----------------------------

Exposure Scenarios Overview				
Title	Sector of use	Process category(ies)	Environmental release category	ES Identifier
Manufacture, Recycling and Distribution (Industrial)	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 8a, 8b, 9	ERC1 - Manufacture of substances	ES1-M1 DCM
Use as a process solvent / extraction medium	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU5 - Manufacture of textiles, leather, fur SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 10, 15	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles	ES2-M2 DCM
Formulation of preparations and/or re-packaging	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)	3, 4, 5, 8a, 8b, 9, 15	ERC2 - Formulation of preparations	ES3-F1 DCM
Laboratory use	SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen) SU24 - Scientific research and development	10, 15	ERC8a - Wide dispersive indoor use of processing aids in open systems	ES4-L1 DCM

Exposure scenario

Methylene chloride - ES2-M2 DCM

Section 1 - Identification of the use

Main user group	Industrial use
Type	Worker
Processes, tasks, activities covered	Use as a Process Solvent / Extraction Medium (Industrial)
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals

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
 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 No information available
Water Solubility Partially miscible; 13.2 g/L @ 25 °C
Vapor Pressure 325 mmHg @ 20°C
Volatility High
 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

Regional use tonnage 2410 t/a

Annual amount per site 2410 t/a

Environmental factors not influenced by risk management

Emission days 100
 Receiving water dilution (fresh or marine) 18000 m3/d

Other operational conditions of use affecting environmental exposure

Emission days 100 (from ESVOC SPERC 1.1.v1)
 Release fraction to air from process (initial release prior to RMM) 0.669
 Release fraction to wastewater from process (initial release prior to RMM) 0.00154
 Release fraction to soil from process (initial release prior to RMM) 0.0

Technical onsite conditions and measures to reduce or limit discharges, air emissions

Technical onsite conditions and measures to reduce or limit discharges, air emissions
 Negligible air emissions as process operates in a contained system.
 Additional good practice advice beyond the REACH Chemical Safety Report
 Bund storage facilities to prevent soil and water pollution in the event of spillage. Ensure all waste water is collected and treated via a WWTP.

Conditions and measures related to municipal sewage treatment plant

Remarks Manufacturing plants will have on-site waste water treatment facilities and emission to the municipal STP will not occur.

Waste management

Air No discharge. No air emission controls required.
 Water Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.5%

Conditions and measures related to external treatment of waste for disposal

Disposal Waste resulting from on-site RMM to be disposed as chemical waste
 Waste treatment methods Hazardous waste incineration

Section 2.2 - Control of worker exposure

General information on risk management related to physicochemical hazard

Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Manufactured and processed at industrial sites in closed continuous processes with either no likelihood of exposure or with only occasional opportunity for exposure in controlled conditions e.g. during maintenance, sampling or discharge of the material. Transfer of the substance is conducted at dedicated facilities using a closed-system with vapour return. Respiratory protection is not required except for certain critical activities where respiratory protective equipment is used, for example, cleaning tanks or reactors.

Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100%
Amounts used	>1000 t/y
Exposure duration	< 8h hour(s)
Use frequency	100 days per year
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a closed system Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100%
Exposure duration	< 8h hour(s)
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a closed system Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator providing a minimum efficiency of 90% (APF 10) Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Exposure duration	< 8 hour(s)
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a predominantly closed system provided with extract ventilation Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately.

<p>Conditions and measures related to personal protection, hygiene and health evaluation</p> <p>Additional good practice advice beyond the REACH Chemical Safety Report</p>	<p>Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop</p> <p>Use eye protection according to EN 166, designed to protect against liquid splashes</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with specific activity training</p> <p>Wear a respirator providing a minimum efficiency of 90% (APF 10)</p> <p>Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices</p> <p>-----</p>
<p>Process category(ies)</p> <p>Covers concentrations up to</p> <p>Exposure duration</p> <p>Indoor/Outdoor use</p> <p>Assumes process temperature up to</p> <p>Organisational measures to prevent /limit releases, dispersion and exposure</p>	<p>PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>100%</p> <p>< 8h hour(s)</p> <p>Indoor</p> <p><=40°C</p> <p>Provide extract ventilation to points where emissions occur</p> <p>Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur.</p> <p>Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop</p>
<p>Conditions and measures related to personal protection, hygiene and health evaluation</p> <p>Additional good practice advice beyond the REACH Chemical Safety Report</p>	<p>Use eye protection according to EN 166, designed to protect against liquid splashes</p> <p>Wear a respirator providing a minimum efficiency of 90% (APF 10)</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with specific activity training</p> <p>Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices</p> <p>-----</p>
<p>Process category(ies)</p> <p>Covers concentrations up to</p> <p>Exposure duration</p> <p>Indoor/Outdoor use</p> <p>Assumes process temperature up to</p> <p>Organisational measures to prevent /limit releases, dispersion and exposure</p>	<p>PROC10 - Roller application or brushing</p> <p>100%</p> <p>< 8h hour(s)</p> <p>Indoor</p> <p><=40°C</p> <p>Provide extract ventilation to points where emissions occur</p> <p>Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur.</p> <p>Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop</p>
<p>Technical conditions and measures to control dispersion from source towards the worker</p> <p>Conditions and measures related to personal protection, hygiene and health evaluation</p> <p>Additional good practice advice beyond the REACH Chemical Safety Report</p>	<p>Provide extract ventilation to points where emissions occur</p> <p>Use eye protection according to EN 166, designed to protect against liquid splashes</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with specific activity training</p> <p>Assumes a good basic standard of occupational hygiene is implemented</p> <p>-----</p>
<p>Process category(ies)</p> <p>Covers concentrations up to</p> <p>Exposure duration</p> <p>Indoor/Outdoor use</p> <p>Assumes process temperature up to</p> <p>Organisational measures to prevent /limit releases, dispersion and exposure</p>	<p>PROC15 - Use as laboratory reagent</p> <p>100%</p> <p>< 8h hour(s)</p> <p>Indoor</p> <p><=40°C</p> <p>Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately.</p> <p>Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop</p>
<p>Conditions and measures related to personal protection, hygiene and health evaluation</p>	<p>Use eye protection according to EN 166, designed to protect against liquid splashes</p> <p>Wear chemically resistant gloves (tested to EN374) in combination with specific activity training</p> <p>Wear a respirator providing a minimum efficiency of 90%</p> <p>-----</p>
<p>Control of consumer exposure</p>	<p>Not intended for consumer use</p>

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	0.31 mg/l	Marine water	0.031 mg/l
Fresh water sediment	2.57 mg/kg dw	Marine water sediment	0.26 mg/kg dw
Water Intermittent	0.27 mg/l	Soil (Agriculture)	0.33 mg/kg dw
Microorganisms in sewage treatment	25.9 mg/l		

Environment	Predicted exposure level	Risk characterization ratio (RCR)
Freshwater	5.17×10^{-3} mg/l	<0.01
Marine water	9.3×10^{-3} mg/l	<0.01
Freshwater sediment	4.16×10^{-4} mg/kg dw	<0.01
Marine sediment	7.49×10^{-4} mg/kg dw	<0.01
Soil	1.26×10^{-4} mg/kg dw	<0.01
Calculation method - EUSES 2.1		

Remarks

No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment. All derived PECs are below the relevant PNEC and so no further assessment or refinements are required.

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 Inhalation				12 mg/kg bw/d
	706 mg/m ³		353 mg/m ³	

Process category(ies)	Exposure route	Predicted exposure level	Risk characterization ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative	0.01 ppm	<0.01
	Worker - dermal	0.07 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative	50 ppm	0.5
	Worker - dermal	0.27 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative	10 ppm	0.1
	Worker - dermal	1.37 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative	10 ppm	0.1
	Worker - dermal	1.37 mg/kg bw/day	< 0.01
PROC10 - Roller application or brushing	Worker - inhalative	25 ppm	0.25
	Worker - dermal	5.49 mg/kg bw/d	< 0.01
PROC15 - Use as laboratory reagent	Worker - inhalative	50 ppm	0.5
	Worker - dermal	0.07 mg/kg bw/d	< 0.01

Calculation method - Used ECETOC TRA 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 EUSES model

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]

Dichloromethane - Exposure Scenarios

CAS-No 75-09-2	Reach Registration Number 01-2119480404-41-xxxx	EC-No. 200-838-9
--------------------------	---	----------------------------

Exposure Scenarios Overview				
Title	Sector of use	Process category(ies)	Environmental release category	ES Identifier
Manufacture, Recycling and Distribution (Industrial)	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 8a, 8b, 9	ERC1 - Manufacture of substances	ES1-M1 DCM
Use as a process solvent / extraction medium	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU5 - Manufacture of textiles, leather, fur SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 10, 15	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles	ES2-M2 DCM
Formulation of preparations and/or re-packaging	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)	3, 4, 5, 8a, 8b, 9, 15	ERC2 - Formulation of preparations	ES3-F1 DCM
Laboratory use	SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen) SU24 - Scientific research and development	10, 15	ERC8a - Wide dispersive indoor use of processing aids in open systems	ES4-L1 DCM

Exposure scenario

Methylene chloride - ES3-F1 DCM

Section 1 - Identification of the use

Main user group	Industrial use
Type	Worker
Processes, tasks, activities covered	Use as a Process Solvent / Extraction Medium (Industrial)
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
 PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
 PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
 PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
 PROC15 - Use as laboratory reagent

Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)

Section 2 - Operational Conditions and Risk Management Measures

Product characteristics

Physical State	Liquid
pH	No information available
Water Solubility	Partially miscible; 13.2 g/L @ 25 °C
Vapor Pressure	325 mmHg @ 20°C
Volatility	High

Covers concentrations up to 100 %

Section 2.1 - Control of environmental exposure

Environmental release category(ies)

ERC2 - Formulation of preparations (mixtures)

Control of environmental exposure

Readily biodegradable
 Regional use tonnage 2810 t/a
 Annual amount per site 239 t/a

Environmental factors not influenced by risk management

Emission days	300
Receiving water dilution (fresh or marine)	18000 m3/d

Other operational conditions of use affecting environmental exposure

Emission days	300 (from ESVOC SPERC 1.1.v1)
Release fraction to air from process (initial release prior to RMM)	0.025
Release fraction to wastewater from process (initial release prior to RMM)	0.02
Release fraction to soil from process (initial release prior to RMM)	0.0

Technical onsite conditions and measures to reduce or limit discharges, air emissions

Technical onsite conditions and measures to reduce or limit discharges, air emissions
 Negligible air emissions as process operates in a contained system.
 Additional good practice advice beyond the REACH Chemical Safety Report
 Bund storage facilities to prevent soil and water pollution in the event of spillage. Ensure all waste water is collected and treated via a WWTP.

Conditions and measures related to municipal sewage treatment plant

Remarks	Manufacturing plants will have on-site waste water treatment facilities and emission to the municipal STP will not occur.
---------	---

Waste management

Air	No discharge. No air emission controls required.
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.5%

Conditions and measures related to external treatment of waste for disposal

Disposal	Waste resulting from on-site RMM to be disposed as chemical waste
Waste treatment methods	Hazardous waste incineration

Section 2.2 - Control of worker exposure

General information on risk management related to physicochemical hazard

Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Manufactured and processed at industrial sites in closed continuous processes with either no likelihood of exposure or with only occasional opportunity for exposure in controlled conditions e.g. during maintenance, sampling or discharge of the material. Transfer of the substance is conducted at dedicated facilities using a closed-system with vapour return. Respiratory protection is not required except for certain critical activities where respiratory protective equipment is used, for example, cleaning tanks or reactors. Measured dermal exposure data are not available.

Control of worker exposure

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Exposure duration	>4 hours (default)
Use frequency	300 days per year
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a predominantly closed system provided with extract ventilation Use of closed transfers of liquids from storage to production equipment (e.g. metered piped or pumped additions) Sample via a closed loop or other system to avoid exposure
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90% (APF 10)
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
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
Organisational measures to prevent /limit releases, dispersion and exposure	Provide extract ventilation to points where emissions occur Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 90% (APF 10) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
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
Organisational measures to prevent /limit releases, dispersion and exposure	Provide extract ventilation to points where emissions occur Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 95% (APF 20) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond	Workers involved in production, handling, sampling and transfer of materials are

the REACH Chemical Safety Report	well-trained in these procedures as well as good industrial hygiene practices -----
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
Organisational measures to prevent /limit releases, dispersion and exposure	Provide extract ventilation to points where emissions occur Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
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)
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Fill containers/cans at dedicated fill points supplied with local extract ventilation Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
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
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90% -----
Control of consumer exposure	Not intended for consumer use

Section 3 - Exposure estimation

Environment

Environmental release category(ies)

ERC2 - Formulation of preparations (mixtures)

Predicted No Effect Concentration (PNEC) - See values below

Fresh water	0.31 mg/l	Marine water	0.031 mg/l
Fresh water sediment	2.57 mg/kg dw	Marine water sediment	0.26 mg/kg dw
Water Intermittent	0.27 mg/l	Soil (Agriculture)	0.33 mg/kg dw
Microorganisms in sewage treatment	25.9 mg/l		

<u>Environment</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
Freshwater	5.17×10^{-3} mg/l	<0.01
Marine water	9.3×10^{-3} mg/l	<0.01
Freshwater sediment	4.16×10^{-4} mg/kg dw	<0.01
Marine sediment	7.49×10^{-4} mg/kg dw	<0.01
Soil	1.26×10^{-4} mg/kg dw	<0.01

Calculation method - EUSES 2.1

Remarks

No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment. All derived PECs are below the relevant PNEC and so no further assessment or refinements are required.

Health

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

<u>Route of exposure</u>	<u>Acute effects (local)</u>	<u>Acute effects (systemic)</u>	<u>Chronic effects (local)</u>	<u>Chronic effects (systemic)</u>
Oral				
Dermal				
Inhalation	706 mg/m ³		353 mg/m ³	12 mg/kg bw/d

<u>Process category(ies)</u>	<u>Exposure route</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative	10 ppm	0.1
	Worker - dermal	0.07 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative	10 ppm	0.1
	Worker - dermal	1.37 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative	25 ppm	0.3
	Worker - dermal	2.74 mg/kg bw/day	< 0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative	4.5 mg/m ³	0.05
	Worker - dermal	1.37 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative	20 mg/m ³	0.2
	Worker - dermal	1.37 mg/kg bw/day	< 0.01
PROC15 - Use as laboratory reagent	Worker - inhalative	50 ppm	0.5
	Worker - dermal	0.07 mg/kg bw/d	< 0.01

Calculation method - Used ECETOC TRA 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 EUSES model

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]

Dichloromethane - Exposure Scenarios

CAS-No 75-09-2	Reach Registration Number 01-2119480404-41-xxxx	EC-No. 200-838-9
--------------------------	---	----------------------------

Exposure Scenarios Overview				
Title	Sector of use	Process category(ies)	Environmental release category	ES Identifier
Manufacture, Recycling and Distribution (Industrial)	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 8a, 8b, 9	ERC1 - Manufacture of substances	ES1-M1 DCM
Use as a process solvent / extraction medium	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU5 - Manufacture of textiles, leather, fur SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 10, 15	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles	ES2-M2 DCM
Formulation of preparations and/or re-packaging	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)	3, 4, 5, 8a, 8b, 9, 15	ERC2 - Formulation of preparations	ES3-F1 DCM
Laboratory use	SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen) SU24 - Scientific research and development	10, 15	ERC8a - Wide dispersive indoor use of processing aids in open systems	ES4-L1 DCM

Exposure scenario

Methylene chloride - ES4-L1 DCM

Section 1 - Identification of the use

Main user group	Industrial use
Type	Worker
Processes, tasks, activities covered	Laboratory use (Professional)
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
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	No information available
Water Solubility	Partially miscible; 13.2 g/L @ 25 °C
Vapor Pressure	325 mmHg @ 20°C
Volatility	High
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
 Regional use tonnage 257 t/a
 Annual amount per site 257 t/a

Environmental factors not influenced by risk management

Emission days	300
Receiving water dilution (fresh or marine)	18000 m3/d

Other operational conditions of use affecting environmental exposure

Emission days	300 (from ESVOC SPERC 1.1.v1)
Release fraction to air from process (initial release prior to RMM)	0.5
Release fraction to wastewater from process (initial release prior to RMM)	0.5
Release fraction to soil from process (initial release prior to RMM)	0.0

Technical onsite conditions and measures to reduce or limit discharges, air emissions

Technical onsite conditions and measures to reduce or limit discharges, air emissions
 Negligible air emissions as process operates in a contained system.
 Additional good practice advice beyond the REACH Chemical Safety Report
 Bund storage facilities to prevent soil and water pollution in the event of spillage. Ensure all waste water is collected and treated via a WWTP.

Conditions and measures related to municipal sewage treatment plant

Remarks	Manufacturing plants will have on-site waste water treatment facilities and emission to the municipal STP will not occur.
---------	---

Waste management

Air	No discharge. No air emission controls required.
Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.5%

Conditions and measures related to external treatment of waste for disposal

Disposal	Waste resulting from on-site RMM to be disposed as chemical waste
Waste treatment methods	Hazardous waste incineration

Section 2.2 - Control of worker exposure

General information on risk management related to physicochemical hazard

Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Manufactured and processed at industrial sites in closed continuous processes with either no likelihood of exposure or with only occasional opportunity for exposure in controlled conditions e.g. during maintenance, sampling or discharge of the material. Transfer of the substance is conducted at dedicated facilities using a closed-system with vapour return. Respiratory protection is not required except for certain critical activities where respiratory protective equipment is used, for example, cleaning tanks or reactors. Measured dermal exposure data are not available.

Control of worker exposure

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	100%
Exposure duration	>4 hours (default)
Use frequency	300 days per year
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90%

Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	100%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	300 days per year
Indoor/Outdoor use	Indoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Provide extract ventilation to points where emissions occur Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimize exposures and to report any skin problems that may develop

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	0.31 mg/l	Marine water	0.031 mg/l
Fresh water sediment	2.57 mg/kg dw	Marine water sediment	0.26 mg/kg dw
Water Intermittent	0.27 mg/l	Soil (Agriculture)	0.33 mg/kg dw
Microorganisms in sewage treatment	25.9 mg/l		

<u>Environment</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
Freshwater	5.17 x 10 ⁻³ mg/l	<0.01
Marine water	9.3 x 10 ⁻³ mg/l	<0.01
Freshwater sediment	4.16 x 10 ⁻⁴ mg/kg dw	<0.01
Marine sediment	7.49 x 10 ⁻⁴ mg/kg dw	<0.01
Soil	1.26 x 10 ⁻⁴ mg/kg dw	<0.01

Calculation method - EUSES 2.1

Remarks

No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment. All derived PECs are below the relevant PNEC and so no further assessment or refinements are required.

Health

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

<u>Route of exposure</u>	<u>Acute effects (local)</u>	<u>Acute effects (systemic)</u>	<u>Chronic effects (local)</u>	<u>Chronic effects (systemic)</u>
Oral Dermal Inhalation	706 mg/m ³		353 mg/m ³	12 mg/kg bw/d

<u>Process category(ies)</u>	<u>Exposure route</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
PROC10 - Roller application or brushing	Worker - inhalative Worker - dermal	60 ppm 5.49 mg/kg bw/d	0.6 < 0.01
PROC15 - Use as laboratory reagent	Worker - inhalative Worker - dermal	50 ppm 0.07 mg/kg bw/d	0.5 < 0.01

Calculation method - Used ECETOC TRA 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 EUSES model

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