

SAFETY DATA SHEET MUSOL SOLVENT

according to Regulation (EC) No. 453/2010

Revision Date: 07-Dec-2017
Preparation Date 07-Dec-2017

Revision Number: 44
Internal ID Code HM001097

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Product Name MUSOL SOLVENT
Internal ID Code HM001097

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

Recommended Use	Solvent
Sector of uses	Refer to the Annex for a listing of uses.
Product category(ies)	Not applicable
Process categories	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC15 - Use as a laboratory reagent PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Article categories	Not applicable
Environmental release category(ies)	ERC2 - Formulation of preparations (mixtures)
Sector of uses	SU2a - Mining, (without offshore industries) SU2b - Offshore industries
Process categories	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

1.3. Details of the supplier of the safety data sheet

Halliburton Energy Services
Halliburton House, Howemoss Place
Kirkhill Industrial Estate
Dyce
Aberdeen, AB21 0GN
United Kingdom
+44 1224 776888

www.halliburton.com

For further information, please contact

E-mail Address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961

Global Incident Response Access Code: 334305

Contract Number: 14012

Emergency telephone - Article 45 - (EC)1272/2008	
Turkey	Ulusal Zehir Danisma Merkezi (UZEM) :114 Acil Saglik Hizmetleri : 112
Europe	112
Bulgaria	Bulgarian poison centre: +359 2 915-44-09 or +359 2 915-43-46
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	00357 22 88 7171
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08

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Portugal	CIAV - Centro de Informação Antivenenos (Portuguese Poison Centre): + 351 213 303 271
Romania	+40 21 318 36 06
Spain	Poison Information Service (ES): +34 91 562 04 20
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Acute Oral Toxicity	Category 4 - (H302)
Acute toxicity - Dermal	Category 4 - (H312)
Acute inhalation toxicity - dust/mist	Category 4 - (H332)
Skin Corrosion/Irritation	Category 2 - (H315)
Serious Eye Damage/Irritation	Category 2 - (H319)

2.2. Label Elements

Hazard Pictograms



Signal Word:

Warning

Hazard Statements:

H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H332 - Harmful if inhaled

Precautionary Statements:

P280 - Wear protective gloves/eye protection/face protection
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 - Call a POISON CENTER or doctor/physician if you feel unwell
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Contains

Substances

Ethylene glycol monobutyl ether

CAS Number

111-76-2

2.3. Other Hazards

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

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH Reg. No
Ethylene glycol monobutyl ether	203-905-0	111-76-2	60 - 100%	Acute Tox. 4 (H302) Acute Tox. 4 (H312)	No data available

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				Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2A (H319)	
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For the full text of the H-phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation If inhaled, move victim to fresh air and seek medical attention.

Eyes In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Skin In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.

Ingestion Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

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

Causes eye irritation. Causes skin irritation. Harmful if swallowed. Harmful if inhaled.

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

Notes to Physician Treat symptomatically

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture

Special exposure hazards in a fire

May be ignited by heat, sparks or flames. Use water spray to cool fire exposed surfaces. Closed containers may explode in fire. Decomposition in fire may produce harmful gases.

5.3. Advice for firefighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove sources of ignition. Use appropriate protective equipment. Wear self-contained breathing apparatus in enclosed areas. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Ensure adequate ventilation. Evacuate all persons from the area.

See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

6.4. Reference to other sections

See Section 8 and 13 for additional information.

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7.1. Precautions for safe handling

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

Store away from oxidizers. Store in a cool well ventilated area. Keep from heat, sparks, and open flames. Keep container closed when not in use. Product has a shelf life of 60 months.

Exposure scenario

Please refer to the attached Annex for a listing of exposure scenarios.

Other Guidelines

No information available

SECTION 8: Exposure controls/personal protection

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 25 ppm TWA: 123 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 100 mg/m ³ STEL: 246 mg/m ³	2 ppm

Substances	CAS Number	Germany	Spain	Portugal	Finland
Ethylene glycol monobutyl ether	111-76-2	TWA: 10 ppm TWA: 49 mg/m ³ Peak: 20 ppm Peak: 98 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ 50 ppm STEL [VLA-EC]; 245 mg/m ³ STEL [VLA-EC]	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 250 mg/m ³

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL" 40 ppm STEL" 200 mg/m ³	20 ppm TWA; 98 mg/m ³ TWA 50 ppm STEL; 246 mg/m ³ STEL	TWA: 10 ppm TWA: 49 mg/m ³ STEL: 20 ppm STEL: 98 mg/m ³	TWA: 10 ppm TWA: 50 mg/m ³ STEL: 20 ppm STEL: 75 mg/m ³

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 98 mg/m ³ STEL: 200 mg/m ³	TWA: 98 mg/m ³ STEL: 246 mg/m ³	TWA: 100 mg/m ³

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m³	TWA: 20 ppm TWA: 98 mg/m³ STEL: 50 ppm STEL: 246 mg/m³	TWA: 20 ppm TWA: 98 mg/m³ STEL: 50 ppm STEL: 246 mg/m³	TWA: 20 ppm TWA: 98 mg/m³ STEL: 50 ppm STEL: 246 mg/m³

Substances	CAS Number	Bulgaria	Turkey
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³

Derived No Effect Level (DNEL)

Worker

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Hazards for the eyes - local effects
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		Inhalation				Dermal			
Ethylene glycol monobutyl ether	98 mg/m ³	663 mg/m ³	Not available	246 mg/m ³	75 mg/kg bw/day	89 mg/kg bw/day	Not available	Not available	Not available

General Population

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Long-term exposure - systemic effects, Oral	Acute / short term exposure - local effects, Oral	Hazards for the eyes - local effects
Ethylene glycol monobutyl ether	49 mg/m ³	426 mg/m ³	Not available	123 mg/m ³	38 mg/kg bw/day	44.5 mg/kg bw/day	Not available	Not available	3.2 mg/kg bw/day	13.4 mg/kg bw/day	Not available

Predicted No Effect Concentration (PNEC)

Substances	Freshwater	Marine water	Intermittent release	Sewage treatment plant	Sediment (freshwater)	Sediment (marine water)	Air	Soil	Secondary poisoning
Ethylene glycol monobutyl ether	8.8 mg/L	0.88 kg/L	9.1 mg/L	463 mg/L	34.6 mg/kg	3.46 mg/kg	Not available	3.13 mg/kg soil dw	0.02 g/kg food

8.2. Exposure controls

Engineering Controls

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional. Organic vapor respirator.

Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Nitrile gloves. (>= 0.65 mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

Skin Protection

Rubber apron.

Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions

None known.

Environmental Exposure Controls Do not allow material to contaminate ground water system

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid
Odor: Mild

Color: Colorless
Odor Threshold: No information available

Property
Remarks/ - Method

Values

pH:

No data available
-70 °C

Freezing Point / Range

Melting Point / Range

No data available

Boiling Point / Range

171 °C / 340 °F

Flash Point

67 °C / 153 °F PMCC

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Flammability (solid, gas)	No data available
Upper flammability limit	10.6%
Lower flammability limit	1.1%
Evaporation rate	0.06 (Butyl Acetate = 1)
Vapor Pressure	0.76 mmHg @ 20 C
Vapor Density	4.1 (air = 1)
Specific Gravity	0.9
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	0.8
Autoignition Temperature	230 °C / 446 °F
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	118.2 (g/mole)
VOC Content (%)	No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong oxidizers. Peroxides. Amphoteric metals such as aluminum, magnesium, lead, tin, or zinc.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Toxicity

Inhalation

Harmful if inhaled. May cause respiratory irritation.

Eye Contact

Causes eye irritation.

Skin Contact

Causes skin irritation. May be absorbed through the skin and contribute to the symptoms listed under ingestion.

Ingestion

Harmful if swallowed. May cause abdominal pain, vomiting, nausea, and diarrhea. May produce nervous system effects such as feeling of weakness, unsteady walk, and dilation of blood vessels.

Chronic Effects/Carcinogenicity

No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethylene glycol monobutyl ether	111-76-2	1414 mg/kg-bw (guinea pig)	>2000 mg/kg (Rabbit)	~2.0 mg/L LC50 (rat, vapor, 4h)

Substances	CAS Number	Skin corrosion/irritation
Ethylene glycol monobutyl ether	111-76-2	Skin, rabbit: Causes moderate skin irritation.

Substances	CAS Number	Serious eye damage/irritation
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Ethylene glycol monobutyl ether	111-76-2	Eye, rabbit: Causes moderate eye irritation
Substances	CAS Number	Skin Sensitization
Ethylene glycol monobutyl ether	111-76-2	Did not cause sensitization on laboratory animals (guinea pig)
Substances	CAS Number	Respiratory Sensitization
Ethylene glycol monobutyl ether	111-76-2	No information available
Substances	CAS Number	Mutagenic Effects
Ethylene glycol monobutyl ether	111-76-2	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Substances	CAS Number	Carcinogenic Effects
Ethylene glycol monobutyl ether	111-76-2	Not regarded as carcinogenic.
Substances	CAS Number	Reproductive toxicity
Ethylene glycol monobutyl ether	111-76-2	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Substances	CAS Number	STOT - single exposure
Ethylene glycol monobutyl ether	111-76-2	No data of sufficient quality are available.
Substances	CAS Number	STOT - repeated exposure
Ethylene glycol monobutyl ether	111-76-2	No data of sufficient quality are available.
Substances	CAS Number	Aspiration hazard
Ethylene glycol monobutyl ether	111-76-2	Not applicable

SECTION 12: Ecological information

12.1. Toxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Ethylene glycol monobutyl ether	111-76-2	EC50(72 h)=1840 mg/L (Pseudokirchneriella subcapitata)	LC50(96 h)=1474 mg/L (Oncorhynchus mykiss) NOAEC(21 d)>100 mg/L (Danio rerio)	No information available	EC50(48 h)=1800 mg/L (Daphnia magna) EC50(21 d)=297 mg/L (Daphnia magna)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Ethylene glycol monobutyl ether	111-76-2	Readily biodegradable (90.4% @ 28d)

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Ethylene glycol monobutyl ether	111-76-2	Not Bioaccumulative; Log Pow=0.81

12.4. Mobility in soil

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Substances	CAS Number	Mobility
Ethylene glycol monobutyl ether	111-76-2	No information available

12.5. Results of PBT and vPvB assessment

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

Substances	PBT and vPvB assessment
Ethylene glycol monobutyl ether	Not PBT/vPvB

12.6. Other adverse effects

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods

Disposal should be made in accordance with federal, state, and local regulations. Incineration recommended in approved incinerator according to federal, state, and local regulations. Substance should NOT be deposited into a sewage facility.

Contaminated Packaging

Follow all applicable national or local regulations.

SECTION 14: Transport information

IMDG/IMO

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

ADN

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group	Not applicable
Environmental Hazards:	Not applicable

ADR/RID

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group	Not applicable
Environmental Hazards:	Not applicable

IATA/ICAO

UN Number	Not restricted
UN proper shipping name:	Not restricted
Transport Hazard Class(es):	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

14.1. UN Number Not restricted

14.2. UN proper shipping name: Not restricted

14.3. Transport Hazard Class(es): Not applicable

14.4. Packing Group Not applicable

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14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User None

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

SECTION 15: Regulatory information

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

International Inventories

EINECS (European Inventory of Existing Chemical Substances)

This product, and all its components, complies with EINECS

US TSCA Inventory

All components listed on inventory or are exempt.

Canadian Domestic Substances List (DSL)

All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Denmark PR No.: 1676804

Norway PR No.: 60761

Germany, Water Endangering Classes (WGK) WGK 1: Low hazard to waters.

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

15.2. Chemical safety assessment

Yes

SECTION 16: Other information

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

H302 - Harmful if swallowed

H312 - Harmful in contact with skin

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H332 - Harmful if inhaled

Key or legend to abbreviations and acronyms used in the safety data sheet

bw – body weight

CAS – Chemical Abstracts Service

CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures

EC – European Commission

EC10 – Effective Concentration 10%

EC50 – Effective Concentration 50%

EEC – European Economic Community

ErC50 – Effective Concentration growth rate 50%

IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk

LC50 – Lethal Concentration 50%

LD50 – Lethal Dose 50%

LL0 – Lethal Loading 0%

LL50 – Lethal Loading 50%

MARPOL – International Convention for the Prevention of Pollution from Ships

mg/kg – milligram/kilogram

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mg/L – milligram/liter

NIOSH – National Institute for Occupational Safety and Health

NOEC – No Observed Effect Concentration

NTP – National Toxicology Program

OEL – Occupational Exposure Limit

PBT – Persistent Bioaccumulative and Toxic

PC – Chemical Product category

PEL – Permissible Exposure Limit

ppm – parts per million

PROC – Process category

REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals

STEL – Short Term Exposure Limit

SU – Sector of Use category

Key literature references and sources for data

www.ChemADVISOR.com/

NZ CCID

Revision Date: 07-Dec-2017

Revision Note

Update to Format

This safety data sheet complies with the requirements of Regulation (EC) No. 2015/830

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

End of Safety Data Sheet

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Annex to SDS					
Substances	CAS Number	Process categories	Environmental release category	Product category(ies)	Sector of uses
Ethylene glycol monobutyl ether	111-76-2	PROC4; PROC8b; PROC15	ERC2	-	SU2a; SU2b

Exposure Scenario

Application of bulk onshore/offshore oilfield liquid or solid/powder.

1. Title Section

Use

Use in batch process where opportunities for exposure arise.
Transfer from support vessel to installation.
Transfer from bulk/ IBC/ drum to on-site storage, transfer to process.
Transfer from pot/tin/tube to process. On-site sampling and testing e.g. QC

Sector of uses

SU2a - Mining, (without offshore industries)
SU2b - Offshore industries

Worker

Process categories

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC15 - Use as a laboratory reagent
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product category(ies)

Not applicable

Article categories

Not applicable

Environmental

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

2. Conditions of use affecting exposure

Control of environmental exposure

Amount used, frequency and duration of use (or from service life)

Substances	Daily Amount Per Site	Annual site tonnage	Frequency	Duration of use
Ethylene glycol monobutyl ether	83000 kg	25000	Continuous release.	300 d/y

Technical and organisational conditions and measures

Substances	Technical and organisational conditions and measures
Ethylene glycol monobutyl ether	Remove sludge regularly from process/cleaning water in reservoir. Prevent entry into waterways, sewers, basements or confined areas. Bund storage facilities to prevent soil and water pollution in the event of spillage. Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases. A leak prevention plan is needed to prevent low level continual releases.

Conditions and measures related to sewage treatment plant

Substances	Conditions and measures related to sewage treatment plant
Ethylene glycol monobutyl ether	Onsite sewage treatment plant, or, Domestic sewage treatment plant. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Substances	Assumed municipal sewage treatment plant flow m3/d	Wastewater Emission Removal Efficiency	Estimated product removal from wastewater via municipal sewage treatment
Ethylene glycol monobutyl ether	2000	-	-

Conditions and measures related to treatment of waste (including article waste)

Substances	Conditions and measures related to treatment of waste (including article waste)
Ethylene glycol monobutyl ether	Dispose of contents/container in accordance with local/regional/national/international regulations.

Other conditions affecting environmental exposure

Substances	Receiving surface water flow m3/d	Degradation
Ethylene glycol monobutyl ether	-	87.4%

Control of Worker Exposure

Product (article) characteristics

Physical State:	Liquid
Vapor Pressure	0.76 mmHg @ 20 C
Dustiness	Not applicable

Substances	Limit the substance content in the product to
Ethylene glycol monobutyl ether	100%

Amount used (or contained in articles), frequency and duration of use/exposure

Substances	Amounts used (daily)	Covers daily exposures up to (hours/day)	Frequency (days/year)
Ethylene glycol monobutyl ether	-	<8	-

Technical and organisational conditions and measures

Substances	Technical and organisational conditions and measures
Ethylene glycol monobutyl ether	Use in closed batch process (synthesis or formulation). Provide a basic standard of general ventilation (5 to 15 air changes per hour). PROC4 + PROC8b: Retain drain downs in sealed storage pending disposal or for subsequent recycle.

Conditions and measures related to personal protection, hygiene and health evaluation

Substances	Conditions and measures related to personal protection, hygiene and health evaluation
Ethylene glycol monobutyl ether	Use suitable eye protection. Wear suitable gloves tested to EN374. Refer to section 8 of the SDS.

Other conditions affecting workers exposure

Substances	Other conditions affecting workers exposure
Ethylene glycol monobutyl ether	PROC4 + PROC8b: Indoor and outdoor use. Assumes process temperature up to 20 °C. Provide basic employee training to prevent/minimize exposures. PROC15: Indoor use. Provide basic employee training to prevent/minimize exposures.

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Substances	Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply
Ethylene glycol monobutyl ether	Wash hands after use. Launder contaminated clothing before reuse. Personal measures have to be applied in case of potential exposure only.

3. Exposure estimation and reference to its source

Environmental release and exposure

Substances	Release to Water	Release to Air	Release to Soil	Release estimation method	Local freshwater dilution factor	Local marine water dilution factor
Ethylene glycol monobutyl ether	0.5%	1%	0.01%	ECETOC TRA	10	100

Substances	Protection Target	Exposure estimate (based on: EUSES 2.1.2)	Unit	RCR
Ethylene glycol monobutyl ether	Freshwater	0.264	mg/L	-
	Sediment (freshwater)	1.03	mg/kg dw	-
	Marine water	0.0265	mg/L	-
	Sediment (marine water)	0.103	mg/kg dw	-
	Sewage treatment plant	2.64	mg/L	-
	Agricultural soil	0.0201	mg/kg dw	-

Substances
Ethylene glycol monobutyl ether

CAS Number
111-76-2

Revision Number: 44

Revision Date: 07-Dec-2017

	Man via Environment - Inhalation	-	mg/m ³	-
	Man via Environment – Oral	-	mg/kg bw/day	-

Worker exposure

Substances	Route of exposure and type of effects	Exposure estimate PROC4	Assessment Method	RCR
Ethylene glycol monobutyl ether	Long-term exposure - systemic effects, Inhalation mg/m ³	5	ESIG GES worker tool	0.3
	Long-term exposure - systemic effects, Dermal mg/kg bw/day	6.86		0.1

Substances	Route of exposure and type of effects	Exposure estimate PROC8b	Assessment Method	RCR
Ethylene glycol monobutyl ether	Long-term exposure - systemic effects, Inhalation mg/m ³	5	ESIG GES worker tool	0.3
	Long-term exposure - systemic effects, Dermal mg/kg bw/day	6.86		0.1

Substances	Route of exposure and type of effects	Exposure estimate PROC15	Assessment Method	RCR
Ethylene glycol monobutyl ether	Long-term exposure - systemic effects, Inhalation mg/m ³	5	ESIG GES worker tool	0.3
	Long-term exposure - systemic effects, Dermal mg/kg bw/day	0.34		0.0

4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling method

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Scaling parameters

The DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on his own that his implemented risk management measures are adequate.