SAFETY DATA SHEET
MONO ETHYLENE GLYCOL

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

1.1. Product identifier

Product name	MONO ETHYLENE GLYCOL
Product number	0380
Synonyms; trade names	1,2-ETHANEDIOL, ETHYLENE ALCOHOL, ETHYLENE GLYCOL, GLYCOL ALCOHOL
REACH registration number	01-2119456816-28-xxxx
CAS number	107-21-1
EC number	203-473-3

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

Identified uses	Intermediate. Distribution of substance Formulation and (re)packing of substances and mixtures Polymerisation. Uses in coatings Use in cleaning agents Lubricants Metal Working Fluids Use as a functional fluid Production of polymers, foam, coatings, adhesives and sealants De-icing and anti-icing applications Laboratories Water treatment Consumer uses. Agrochemical uses

1.3. Details of the supplier of the safety data sheet

Supplier	Fluid Science Limited Unit 5 Pride Point Ashcroft Road Knowsley Industrial Park Kirkby L33 7TW +44 (0)1244 506 860 (General Enquiries)+
Contact person	sales@fluidscienceltd.com

1.4. Emergency telephone number

Emergency telephone	0870 190 6777 (National Chemical Emergency Centre) +44 (0)1270 502891

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards	Not Classified
Health hazards	Acute Tox. 4 - H302 STOT RE 2 - H373
Environmental hazards	Not Classified

2.2. Label elements

EC number	203-473-3

MONO ETHYLENE GLYCOL

Hazard pictograms

Signal word	Warning
Hazard statements	H302 Harmful if swallowed. H373 May cause damage to organs through prolonged or repeated exposure.
Precautionary statements	P260 Do not breathe vapour/ spray. P264 Wash contaminated skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P301+P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell. P314 Get medical advice/ attention if you feel unwell. P330 Rinse mouth. P501 Dispose of contents/ container in accordance with local regulations.
Contains	ETHANEDIOL

2.3. Other hazards

SECTION 3: Composition/information on ingredients

3.2. Mixtures

ETHANEDIOL		**100.0%**
CAS number: 107-21-1	EC number: 203-473-3	REACH registration number: 01-2119456816-28-xxxx

Classification
Acute Tox. 4 - H302
STOT RE 2 - H373

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. If breathing stops, provide artificial respiration. Never give anything by mouth to an unconscious person. Symptoms of poisening may occur even after several hours; therefore medical observation is suggested for at least 48 hours after the accident.
Inhalation	Move affected person to fresh air at once. Get medical attention if any discomfort continues.
Ingestion	DO NOT induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person.
Skin contact	Remove contaminated clothing and rinse skin thoroughly with water.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes.

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

General information No additional symptoms or effects are anticipated.

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

Notes for the doctor If swallowed, flush stomach, then activated charcoal (carbo medicalis) and sodium sulfate.

MONO ETHYLENE GLYCOL

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with foam, carbon dioxide, dry powder or water fog.

5.2. Special hazards arising from the substance or mixture

Specific hazards Fire creates: Toxic gases/vapours/fumes of: Carbon monoxide (CO). Carbon dioxide (CO_2).

Hazardous combustion products When heated, vapours/gases hazardous to health may be formed.

5.3. Advice for firefighters

Protective actions during firefighting Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions

Environmental precautions Do not discharge into drains or watercourses or onto the ground. Avoid or minimise the creation of any environmental contamination.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Absorb spillage with non-combustible, absorbent material. Flush away spillage with plenty of water.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid spilling. Avoid contact with skin and eyes. Avoid the formation of mists. Provide adequate ventilation.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep separate from food, feedstuffs, fertilisers and other sensitive material. Store in closed original container at temperatures between 0°C and 40°C.

Storage class Miscellaneous hazardous material storage.

7.3. Specific end use(s)

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

ETHANEDIOL

Long-term exposure limit (8-hour TWA): WEL 20 ppm 52 mg/m³ vapour
Short-term exposure limit (15-minute): WEL 40 ppm 104 mg/m³ vapour
Sk
Long-term exposure limit (8-hour TWA): WEL 10 mg/m³ particulate
Sk

MONO ETHYLENE GLYCOL

WEL = Workplace Exposure Limit
Sk = Can be absorbed through the skin.

DNEL	Industry - Dermal; Long term systemic effects: 106 mg/kg/day Industry - Inhalation; Long term local effects: 35 mg/m³ Consumer - Dermal; Long term systemic effects: 53 mg/kg/day Consumer - Inhalation; Long term local effects: 7 mg/m³
PNEC	- Fresh water; 10 mg/l - marine water; 1 mg/l - Sediment (Freshwater); 20.9 mg/kg - Intermittent release; 10 mg/l - Soil; 1.53 mg/kg - STP; 199.5 mg/l

8.2. Exposure controls

Protective equipment

Appropriate engineering controls	Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients. Use explosion-proof general and local exhaust ventilation.
Eye/face protection	Wear chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.
Hand protection	It is recommended that chemical-resistant, impervious gloves are worn. Wear protective gloves made of the following material: Butyl rubber. Viton rubber (fluoro rubber). To protect hands from chemicals, gloves should comply with European Standard EN374. Frequent changes are recommended. It should be noted that liquid may penetrate the gloves.
Other skin and body protection	Use barrier creams to prevent skin contact. Provide eyewash station and safety shower. Wear appropriate clothing to prevent repeated or prolonged skin contact.
Hygiene measures	Use engineering controls to reduce air contamination to permissible exposure level. Provide eyewash station and safety shower. Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes wet or contaminated. Eating, smoking and water fountains prohibited in immediate work area. Do not smoke in work area.
Respiratory protection	If ventilation is inadequate, suitable respiratory protection must be worn. It is recommended to use respiratory equipment with combination filter, type A2/P2.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.
Odour	Odourless.
pH	pH (diluted solution): 6 - 7.5 10
Melting point	-13°C
Initial boiling point and range	197°C
Flash point	111°C
Vapour pressure	0.123 hPa @ 20°C

MONO ETHYLENE GLYCOL

Relative density	1.11 @ 20°C
Partition coefficient	: -1.36
Auto-ignition temperature	398°C
Viscosity	16.1 mPa s @ 25°C

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Not available.

10.4. Conditions to avoid

Conditions to avoid Avoid contact with strong oxidising agents. Avoid heat, flames and other sources of ignition.

10.5. Incompatible materials

Materials to avoid Strong oxidising agents.

10.6. Hazardous decomposition products

Hazardous decomposition products None at ambient temperatures. Thermal decomposition or combustion products may include the following substances: Oxides of carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	7,712.0
Species	Rat
ATE oral (mg/kg)	500.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	3,500.0
Species	Mouse

Acute toxicity - inhalation

Species	Rat
Notes (inhalation LC_{50})	Time: 6 hours.

Skin corrosion/irritation

Animal data Not irritating.

Serious eye damage/irritation

Serious eye damage/irritation Not irritating.

Respiratory sensitisation

MONO ETHYLENE GLYCOL

Respiratory sensitisation	Guinea pig: Not sensitising.

Skin sensitisation

Skin sensitisation	- Guinea pig: Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro	No information available.
Genotoxicity - in vivo	No information available.

Carcinogenicity

Carcinogenicity	No information available.

Reproductive toxicity

Reproductive toxicity - fertility	No information available.
Reproductive toxicity - development	No information available.

Specific target organ toxicity - single exposure

STOT - single exposure	Not available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	Not available.

Inhalation	Aspiration hazard if swallowed. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis. Overexposure may depress the central nervous system, causing dizziness and intoxication.
Ingestion	Harmful if swallowed.
Skin contact	Repeated exposure may cause skin dryness or cracking.
Eye contact	Irritation of eyes and mucous membranes.
Acute and chronic health hazards	Prolonged or repeated exposure to vapours in high concentrations may cause the following adverse effects: Central and/or peripheral nervous system damage. Brain damage.
Route of exposure	Ingestion. Inhalation
Target organs	Brain Respiratory system, lungs Mucous membranes
Medical symptoms	Skin irritation. Irritation of eyes and mucous membranes. Gas or vapour in high concentrations may irritate the respiratory system. Symptoms following overexposure may include the following: Headache. Fatigue. Nausea, vomiting.
Medical considerations	Skin disorders and allergies. Convulsions. Central nervous system depression. Aspiration hazard if swallowed. Entry into the lungs following ingestion or vomiting may cause chemical pneumonitis.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity

Acute toxicity - fish	LC50, 96 hours: 72860 mg/l, Pimephales promelas (Fat-head Minnow)
Acute toxicity - aquatic invertebrates	EC_{50}, 48 hours: > 100 mg/l, Daphnia magna
Acute toxicity - aquatic plants	EC_{50}, 96 hours: 6500-13000 mg/l, Pseudokirchneriella subcapitata.

MONO ETHYLENE GLYCOL

Acute toxicity - microorganisms EC20, 30 minutes: > 1995 mg/l, Activated sludge

12.2. Persistence and degradability

Persistence and degradability The product is readily biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential The product has low potential for bioaccumulation.

Partition coefficient : -1.36

12.4. Mobility in soil

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment No information available

12.6. Other adverse effects

Other adverse effects Do not discharge product unmonitored into the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods Confirm disposal procedures with environmental engineer and local regulations. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

Waste class EWC NUMBER: Allocation of a waste code number in accordance with the European Waste Catalogue, should be carried out in agreement with an EA authorised waste disposal company.

SECTION 14: Transport information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

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

MONO ETHYLENE GLYCOL

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

EU legislation	Regulation (EC) No 1907/2006 REACH. Regulation (EC) No 1272/2008 CLP. Dangerous Substances Directive 67/548/EEC.

15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

SECTION 16: Other information

General information	Since empty containers retain product residue, follow label warnings, even after container is emptied. For further Health and Safety information contact: Health and Safety Officer. Labels should not be removed from containers until they have been cleaned and no product remains within.
Revision comments	Updated company address.
Issued by	Compliance Department
Revision date	24/10/2018
Revision	8
Supersedes date	10/05/2016
SDS number	0380
SDS status	Approved.
Hazard statements in full	H302 Harmful if swallowed. H373 May cause damage to organs through prolonged or repeated exposure. H373 May cause damage to organs through prolonged or repeated exposure if swallowed.

Monoethylene Glycol: CAS: 107-21-1

Section 1	Exposure Scenario: Worker
Title	**Use as an intermediate, process chemical - industrial**
Sector of Use	SU3
Process Category	PROC1, PROC2 PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15
Environmental release Category	ERC4, ERC6a
Processes, tasks, activities covered	Use as intermediate. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures

Contributing Scenarios	Risk Management Measures
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Mixing or blending in batch process for formulation of preparations and articles (multistage and/or significant contact)	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	Handle only at a place with local exhaust system (or another appropriate exhaust). Efficiency (%): 90 In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Production of preparations or articles by tabletting, compression, extrusion, pelletisation	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use as laboratory reagent	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	Control of environmental exposure
Operational conditions	
Contributing scenario	**Use as an intermediate, process chemical**
Operational Conditions	

Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**	
Title	**Distribution of substance including substance transfers - industrial**	
Sector of Use	SU3	
Process Category	PROC1, PROC2 PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15	
Environmental release Category	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7	
Processes, tasks, activities covered	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities.	
Section 2	**Operational conditions and risk management measures**	
Product characteristics		
Physical form of product	Liquid	
Volatility	vapour pressure 0.123 hPa	
Concentration of substance in product	Up to 100%	
Section 2.1	**Control of worker exposure**	
Operational conditions		
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	
Risk Management Measures		
Contributing Scenarios	**Risk Management Measures**	
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.	
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.	

Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	Handle only at a place with local exhaust system (or another appropriate exhaust). Efficiency (%): 90 In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use as laboratory reagent	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Distribution of substance**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk managment measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Formulation and (re)packing of substances and mixtures - industrial**
Sector of Use	SU3
Process Category	PROC1, PROC2 PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15
Environmental release Category	ERC2
Processes, tasks, activities covered	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

Monoethylene Glycol: CAS: 107-21-1

Section 2	Operational conditions and risk management measures
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).
Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Mixing or blending in batch process for formulation of preparations and articles (multistage and/or significant contact)	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	Handle only at a place with local exhaust system (or another appropriate exhaust). Efficiency (%): 90 In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Production of preparations or articles by tabletting, compression, extrusion, pelletisation	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use as laboratory reagent	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	Control of environmental exposure
Operational conditions	
Contributing scenario	**Formulation and (re)packing of substances and mixtures**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	Exposure estimation
3.1 Health	ECETOC TRA version 2
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	Guidance to check compliance with the Exposure Scenario
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH

	Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Polymerisation - industrial**
Sector of Use	SU3
Process Category	PROC1, PROC2 PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC15
Environmental release Category	ERC6c
Processes, tasks, activities covered	Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Mixing or blending in batch process for formulation of preparations and articles (multistage and/or significant contact)	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Calendering operations	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	Handle only at a place with local exhaust system (or another appropriate exhaust). Efficiency (%): 90 In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to	Wear suitable eye protection if exposure to the eyes may be possible.

vessels/large containers at dedicated facility	Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use as laboratory reagent	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Polymerisation**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Use in cleaning agents - industrial**
Sector of Use	SU3
Process Category	PROC1, PROC2 PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13
Environmental release Category	ERC3
Processes, tasks, activities covered	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**

Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Industrial spraying	Handle only at a place with local exhaust system (or another appropriate exhaust). Efficiency (%): 50 Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	Handle only at a place with local exhaust system (or another appropriate exhaust). Efficiency (%): 90 In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Roller application or brushing	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in cleaning agents**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Exposure assessment is based on Stoffenmanager v4.0 (inhalative exposure) and RISKOFDERM v2.1 (dermal exposure) for PROC7.
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the

	ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Use in paints and coatings - industrial**
Sector of Use	SU3
Process Category	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15
Environmental release Category	ERC4
Processes, tasks, activities covered	Covers the use in coatings (paints, inks, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow) and equipment cleaning, maintenance and associated laboratory activities.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Mixing or blending in batch process for formulation of preparations and articles (multistage and/or significant contact)	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Industrial spraying	Handle only at a place with local exhaust system (or another appropriate exhaust). Efficiency (%): 50 Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear suitable coveralls to prevent exposure to the skin.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	Handle only at a place with local exhaust system (or another appropriate exhaust). Efficiency (%): 90 In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Roller application or brushing	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Use as laboratory reagent	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in cleaning agents**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Use in lubricants - industrial**
Sector of Use	SU3
Process Category	PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18
Environmental release Category	ERC4, ERC7
Processes, tasks, activities covered	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid

Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Industrial spraying	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear suitable coveralls to prevent exposure to the skin.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Roller application or brushing	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Lubrication at high energy conditions and in partly open process	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Use as laboratory reagent	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in lubricants**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	Guidance to check compliance with the Exposure Scenario
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	Exposure Scenario: Worker	
Title	**Use in metal working fluids - industrial**	
Sector of Use	SU3	
Process Category	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17	
Environmental release Category	ERC4	
Processes, tasks, activities covered	Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.	
Section 2	**Operational conditions and risk management measures**	
Product characteristics		
Physical form of product	Liquid	
Volatility	vapour pressure 0.123 hPa	
Concentration of substance in product	Up to 100%	
Section 2.1	**Control of worker exposure**	
Operational conditions		
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	
Risk Management Measures		
Contributing Scenarios		**Risk Management Measures**
Use in closed process, no likelihood of exposure		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)		Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Industrial spraying		Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

	Wear suitable coveralls to prevent exposure to the skin.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Roller application or brushing	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Lubrication at high energy conditions and in partly open process	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in metal working fluids**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Use as functional fluid - industrial**
Sector of Use	SU3
Process Category	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9

Monoethylene Glycol: CAS: 107-21-1

Environmental release Category	ERC7
Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use as functional fluid**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-

	Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Production of Polymers, filled polymers, foams, coatings, adhesives, sealants - industrial**
Sector of Use	SU3
Process Category	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15
Environmental release Category	ERC2, ERC3, ERC5, ERC6c
Processes, tasks, activities covered	Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Industrial spraying	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear suitable coveralls to prevent exposure to the skin.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Roller application or brushing	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Production of preparations or articles by tabletting, compression, extrusion, pelletisation	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use as laboratory reagent	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Production of Polymers, filled polymers, foams, coatings, adhesives, sealants**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Use in Laboratories - industrial**
Sector of Use	SU3
Process Category	PROC15
Environmental release Category	ERC8a
Processes, tasks, activities covered	Use of the substance within laboratory settings, including material transfers and equipment cleaning.
Section 2	**Operational conditions and risk management measures**
Product characteristics	

Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).
Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use as laboratory reagent	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in Laboratories**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Use in Polymers, filled polymers, foams, coatings, adhesives, sealants, paints - professional**
Sector of Use	SU22
Process Category	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19
Environmental release Category	ERC8a, ERC8c, ERC8d, ERC8f

Monoethylene Glycol: CAS: 107-21-1

Processes, tasks, activities covered	Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, paints etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Roller application or brushing	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Non-Industrial spraying	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear suitable coveralls to prevent exposure to the skin.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Production of preparations or articles by tabletting, compression, extrusion, pelletisation	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use as laboratory reagent	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Hand-mixing with intimate contact and only PPE available	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in Polymers, filled polymers, foams, coatings, adhesives, sealants, paints**
Operational Conditions	

Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**	
Title	**Water Treatment - Industrial**	
Sector of Use	SU3	
Process Category	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13	
Environmental release Category	ERC3, ERC4	
Processes, tasks, activities covered	Covers the use of the substance for the treatment of water at industrial facilities in open and closed systems.	
Section 2	**Operational conditions and risk management measures**	
Product characteristics		
Physical form of product	Liquid	
Volatility	vapour pressure 0.123 hPa	
Concentration of substance in product	Up to 100%	
Section 2.1	**Control of worker exposure**	
Operational conditions		
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	
Risk Management Measures		
Contributing Scenarios		**Risk Management Measures**
Use in closed process, no likelihood of exposure		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Water Treatment**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Use in metal working fluids - professional**
Sector of Use	SU22
Process Category	PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17
Environmental release Category	ERC8a, ERC8d
Processes, tasks, activities covered	Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.

Monoethylene Glycol: CAS: 107-21-1

Section 2	Operational conditions and risk management measures
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Roller application or brushing	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Non-Industrial spraying	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear suitable coveralls to prevent exposure to the skin.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Lubrication at high energy conditions and in partly open process	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in metal working fluids**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1

3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**	
Title	**Use in cleaning agents - professional**	
Sector of Use	SU22	
Process Category	PROC1, PROC2 PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13	
Environmental release Category	ERC8a, ERC8d	
Processes, tasks, activities covered	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.	
Section 2	**Operational conditions and risk management measures**	
Product characteristics		
Physical form of product	Liquid	
Volatility	vapour pressure 0.123 hPa	
Concentration of substance in product	Up to 100%	
Section 2.1	**Control of worker exposure**	
Operational conditions		
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	
Risk Management Measures		
Contributing Scenarios		**Risk Management Measures**
Use in closed process, no likelihood of exposure		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility		In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Roller application or brushing	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Non-Industrial spraying	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear suitable coveralls to prevent exposure to the skin.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in cleaning agents**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Exposure assessment is based on Stoffenmanager v4.0 (inhalative exposure) and RISKOFDERM v2.1 (dermal exposure) for PROC7.
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Use in De-icing/Anti-icing applications/agents - professional**
Sector of Use	SU22
Process Category	PROC1, PROC2, PROC8a, PROC8b, PROC11
Environmental release Category	ERC8d
Processes, tasks, activities covered	Ice prevention and de-icing of vehicles, aircraft and other equipment by spraying.
Section 2	**Operational conditions and risk management measures**

Monoethylene Glycol: CAS: 107-21-1

Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Non-Industrial spraying	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Wear suitable coveralls to prevent exposure to the skin.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in De-icing/Anti-icing applications/agents**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Exposure assessment is based on Stoffenmanager v4.0 (inhalative exposure) and RISKOFDERM v2.1 (dermal exposure) for PROC7.
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Monoethylene Glycol: CAS: 107-21-1

Section 1	Exposure Scenario: Worker
Title	**Use as functional fluid - professional**
Sector of Use	SU22
Process Category	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC9, PROC20
Environmental release Category	ERC9a, ERC9b
Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).
Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Heat and pressure transfer fluids in dispersive, professional use but in closed systems	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	Control of environmental exposure
Operational conditions	
Contributing scenario	**Use as functional fluid**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	Exposure estimation
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**	
Title	**Use in Laboratories - professional**	
Sector of Use	SU22	
Process Category	PROC15	
Environmental release Category	ERC8a	
Processes, tasks, activities covered	Use of the substance within laboratory settings, including material transfers and equipment cleaning.	
Section 2	**Operational conditions and risk management measures**	
Product characteristics		
Physical form of product	Liquid	
Volatility	vapour pressure 0.123 hPa	
Concentration of substance in product	Up to 100%	
Section 2.1	**Control of worker exposure**	
Operational conditions		
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	
Risk Management Measures		
Contributing Scenarios		**Risk Management Measures**
Use as laboratory reagent		Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Use in Laboratories**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**

3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario: Worker**
Title	**Water Treatment - professional**
Sector of Use	SU22
Process Category	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13
Environmental release Category	ERC8f
Processes, tasks, activities covered	Covers the use of the substance for the treatment of water at industrial facilities in open and closed systems.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Up to 100%
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).
Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch process (synthesis or formulation)	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Use in batch and other process (synthesis)	Wear suitable eye protection if exposure to the eyes may be possible.

where opportunity for exposure arises	Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	In case no LEV is present, a suitable respiratory protection is required. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Water Treatment**
Operational Conditions	
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario Title**
Title	**Uses in Agrochemicals – Professional**
Sector of Use	SU21
Process Category	PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC9, PROC 11, PROC 13
Environmental release Category	ERC8a, ERC8d
Processes, tasks, activities covered	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa

Concentration of substance in product	Covers percentage substance in the product up to 100 %
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).

Risk Management Measures	
Contributing Scenarios	**Risk Management Measures**
Use in closed process, no likelihood of exposure	Wear suitable eye protection if exposure to the eyes may be possible.
Use in closed, continuous process with occasional controlled exposure	Wear suitable eye protection if exposure to the eyes may be possible.
Use in batch and other process (synthesis) where opportunity for exposure arises	Wear suitable eye protection if exposure to the eyes may be possible.
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	Handle only at a place with local exhaust system (or other appropriate exhaust). Efficiency (%): 80. Wear suitable eye protection if exposure to the eyes may be possible. Wear suitable gloves tested to EN374.
Transfer (charging/discharging) from/to vessels/large containers at dedicated facility	Wear suitable eye protection if exposure to the eyes may be possible.
Transfer into small containers (dedicated filling line, including weighing)	Wear suitable eye protection if exposure to the eyes may be possible.
Non industrial spraying	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Wear suitable eye protection if exposure to the eyes may be possible. Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Treatment of articles by dipping and pouring	Wear suitable eye protection if exposure to the eyes may be possible.

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Uses in Agrochemicals**
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ECETOC TRA version 2 Stoffenmanager v4.0 RISKOFDERM v2.1
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	For further advice on adjusting operational conditions and risk management measures and for applying scaling please see chapter 7.7 of Cefics REACH Practical Guide on Exposure Assessment and Communication in the Supply Chains, Part I: http://www.cefic.org/Documents/IndustrySupport/Part-I-Introduction-Chemical-Safety-Assessment.pdf If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.

4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario Title**	
Title	**Consumer use**	
Sector of Use	SU20	
Product Category	PC1, PC4, PC8, PC9, PC15, PC16, PC17, PC18, PC23, PC31, PC32, PC34, PC35	
Environmental release Category	ERC8a, ERC8c, ERC8d, ERC8f, ERC9a, ERC9b	
Processes, tasks, activities covered	Use in consumer products.	
Section 2	**Operational conditions and risk management measures**	
Product characteristics		
Physical form of product	Liquid	
Volatility	vapour pressure 0.123 hPa	
Concentration of substance in product	Covers percentage substance in the product up to 100 %	
Section 2.1	**Control of worker exposure**	
Operational conditions		
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)	
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).	
Risk Management Measures		
Contributing Scenarios	**Operational conditions**	**Risk Management Measures**
Adhesives, sealants	n/a	No special measures are required
Anti-freeze and de-icing products, non-spraying products	<15 min. exposure @ 25°C	No special measures are required
Anti-freeze and de-icing products, spraying products	<15 min. exposure @ 25°C	Spraying away from the exposed person
Biocidal products	n/a	Spraying away from the exposed person
Coatings and paints, fillers, thinners, paint removers, non-spraying products (waterborne paint)	n/a	No special measures are required
Coatings and paints, fillers, thinners, paint removers, spraying products	n/a	Spraying away from the exposed person
Non-metal surface treatment products - non-spraying products	n/a	No special measures are required
Non-metal surface treatment products - spraying products	n/a	Spraying away from the exposed person
Heat transfer fluids	<15 min. exposure @ 25°C	No special measures are required
Hydraulic fluids	<15 min. exposure @ 25°C	No special measures are required
Ink and toners	n/a	No special measures are required
Leather tanning, dye, finishing, impregnation and care products	n/a	No special measures are required
Polishes and wax blends	n/a	No special measures are required
Polymer preparation and compounds	n/a	No special measures are required
Textile dyes, finishing and impregnating products: including bleaches and other processing aids	n/a	No special measures are required

Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	For products that are directly used for cleaning, the concentration of the substance has to be limited to <4%.	No special measures are required
Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	n/a	Spraying away from the exposed person

Section 2.2	**Control of environmental exposure**
Operational conditions	
Contributing scenario	**Consumer use**
Frequency and duration of use	Emission Days (days/year): 240

Section 3	**Exposure estimation**
3.1 Health	ConsExpo (v4.4)
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	**Guidance to check compliance with the Exposure Scenario**
4.1 Health	ConsExpo (v4.4) http://www.rivm.nl/en/Topics/C/ConsExpo
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 1	**Exposure Scenario Title**
Title	**Use in oil and gas field drilling- industrial use**
Sector of Use	SU3
Process Category	PROC2, PROC5, PROC8a
Environmental release Category	ERC7
Processes, tasks, activities covered	Processes, tasks, activities covered Oil field well drilling operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance.
Section 2	**Operational conditions and risk management measures**
Product characteristics	
Physical form of product	Liquid
Volatility	vapour pressure 0.123 hPa
Concentration of substance in product	Covers percentage substance in the product up to 100 %
Section 2.1	**Control of worker exposure**
Operational conditions	
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently)
Other Operational Conditions affecting worker exposure	Assumes a good basic standard of occupational hygiene is implemented. Assumes activities are at ambient temperature (unless stated differently).
Risk Management Measures	

Monoethylene Glycol: CAS: 107-21-1

Contributing Scenarios	Risk Management Measures
Use in closed, continuous process with occasional controlled exposure	No special measures are required
Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	No special measures are required
Transfer (charging/discharging) from/to vessels/large containers at non-dedicated facility	No special measures are required

Section 2.2	Control of environmental exposure
Operational conditions	
Contributing scenario	**Use in oil and gas field drilling**
Frequency and duration of use	Emission Days (days/year): 240

Section 3	Exposure estimation
3.1 Health	EasyTRA Version 3.0
3.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Section 4	Guidance to check compliance with the Exposure Scenario
4.1 Health	For additional instructions relating to adaptation of conditions of use in view of a scaling, pls. see the VCI practice guide, part I, section 7.7. https://www.vci.de/Themen/Chemikaliensicherheit/REACH/Seiten/REACH-Praxisfuehrer.aspx If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
4.2. Environment	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.