

ETHYLENE GLYCOL (Premium Grade, First Grade)



Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Revision date: 28 Oct 2020 Version: 4.0

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

1.1. Product identifier

Product form	: Substance
Trade name	: ETHYLENE GLYCOL (Premium Grade, First Grade)
IUPAC name	: ethane-1,2-diol
EC Index-No.	: 603-027-00-1
EC-No.	: 203-473-3
CAS-No.	: 107-21-1
REACH registration No	: 01-2119456816-28-0025
Type of product	: Pure substance
Formula	: C ₂ H ₆ O ₂
Synonyms	: 1,2-dihydroxyethane / 1,2-ethanediol / 1,2-ethylene glycol / 2-hydroxyethanol / antifreeze / COREXIT 2920 / dihydroxyethane / DOWTHERM SR1 / ECA6969 / EG (=ethylene glycol) / ethane-1,2-diol / ethanediol / ethylene alcohol / ethylene dihydrate / ethylene glycol / FRIDEX / glycohol alcohol / glycol / glycol alcohol / LUTROL-9 / MACROGOL 400BPC / MEG / monoethylene glycol / NA1142 / NORKOOL / RAMP / TESCOL / thermofluide UCAR17 / UCAR17 / ZEREX
Product group	: Raw material

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

1.2.1. Relevant identified uses

Main use category	: Industrial use, Professional use, Consumer use
Use of the substance/mixture	: Solvent Fuel: additive Oil: additive Chemical raw material Anti-freezing agent

Title	Life cycle stage	Use descriptors
Manufacture of substances (ES Ref.: ES-1)	Industrial, Manufacture	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15, ERC1, ERC4
Use as an intermediate (ES Ref.: ES-2)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15, ERC6c
Use as process chemical (ES Ref.: ES-3)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, ERC4
Distribution of substance (ES Ref.: ES-4)	Industrial, Manufacture	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7
Formulation & (re)packing of substances and mixtures (ES Ref.: ES-5)	Industrial, Formulation	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, ERC2
Production of polymers (ES Ref.: ES-6)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC15, ERC6c
Use in Paints/ Coatings (ES Ref.: ES-7)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15, ERC4
Use in Cleaning Agents (ES Ref.: ES-10)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13, ERC4
Use in lubricants (ES Ref.: ES-13)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18, ERC4, ERC7

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Use in metal working fluids (ES Ref.: ES-14)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, ERC4
Use in Agrochemicals (ES Ref.: ES-16)	Industrial	SU0, PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC9, PROC11, PROC13, ERC8a, ERC8d
Use in/as Functional fluids (ES Ref.: ES-17)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC9, ERC7
Use in laboratories (ES Ref.: ES-22)	Industrial	SU0, PROC15, ERC4
Use in water treatment agents (ES Ref.: ES-23)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13, ERC3, ERC4
Production of Polymers, filled polymers, foams, coatings, adhesives, sealants (ES Ref.: ES-25)	Industrial	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, ERC2, ERC3, ERC5, ERC6c
Use as Oilfield chemicals (ES Ref.: ES-29)	Industrial	SU2a, SU2b, PROC2, PROC5, PROC8a, ERC2, ERC7
Use in Paints/ Coatings /Adhesives/ Sealants/ Foams/ Polymers / filled Polymers (ES Ref.: ES-8)	Professional	SU0, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19, ERC8a, ERC8c, ERC8d, ERC8f
Use in Cleaning Agents (ES Ref.: ES-11)	Professional	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13, ERC8a, ERC8d
Use in metal working fluids (ES Ref.: ES-15)	Professional	SU0, PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC17, ERC8a
Use in/as Functional fluids (ES Ref.: ES-18)	Professional	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC9, PROC20, ERC9a, ERC9b
Use in/as de-icing/anti-icing applications/agents (ES Ref.: ES-20)	Professional	SU0, PROC1, PROC2, PROC8a, PROC8b, PROC11, ERC8d
Use in laboratories (ES Ref.: ES-22)	Professional	SU0, PROC15, ERC8a
Use in water treatment agents (ES Ref.: ES-28)	Professional	SU0, PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13, ERC8f
Use in Paints/ Coatings / Surface treatment products (ES Ref.: ES-9)	Consumer	SU0, PC9a, PC15, PC18, PC23, PC31, PC34, ERC8a, ERC8c, ERC8d, ERC8f
Use in Cleaning Agents (ES Ref.: ES-12)	Consumer	SU0, PC35, ERC8a, ERC8d
Use in heat transfer and hydraulic fluids (ES Ref.: ES-19)	Consumer	SU0, PC16, PC17, ERC9a, ERC9b
Use in/as de-icing/anti-icing applications/agents (ES Ref.: ES-21)	Consumer	SU0, PC4, ERC8d
Consumer use in adhesives and sealants (ES Ref.: ES-24)	Consumer	SU0, PC1, ERC8c, ERC8f
Production of rigid foam (ES Ref.: ES-26)	Consumer	SU0, PC32, ERC8a, ERC8f
Use in biocidal products (ES Ref.: ES-27)	Consumer	SU0, PC8, ERC8a, ERC8d

Full text of use descriptors: see section 16

1.2.2. Uses advised against

Restrictions on use : Pharmaceuticals

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Title	Use descriptors	Reason
Consumer uses advised against	PC29	

Full text of use descriptors: see section 16

NOR1.3. Details of the supplier of product safety information sheet

SIBUR-NEFTEKHIM JSC
Eastern Industrial Zone 390
Dzerzhinsk - Russian Federation
T +7 8313 27-59-09 - F +7 8313 27-59-09
infosnh@snh.sibur.ru

1.4. Emergency telephone number

Emergency number : +7 8313 27-59-09 (round the clock)

Country	Official advisory body	Address	Emergency number	Comment
Belgium	Centre Anti-Poisons/Antigifocentrum c/o Hôpital Central de la Base - Reine Astrid	Rue Bruyn 1 1120 Bruxelles/Brussel	+32 70 245 245	Please dial: 070 245 245 for any urgent questions about intoxication (free of charge 24/7), if not accessible, dial: 02 264 96 30 (standard fee)
Croatia	Centar za kontrolu otrovanja Institut za medicinska istraživanja i medicinu rada	Ksaverska Cesta 2 p.p. 291 10000 Zagreb	+385 1 234 8342	
Denmark	Giftlinjen Bispebjerg Hospital	Bispebjerg Bakke 23 2400 København NV	+45 82 12 12 12	
Estonia	Mürgistusteabekeskus	Gonsiori 29 15027 Tallinn	16662 +372 626 93 90	
Finland	Myrkytystietokeskus	Stenbäckinkatu 9 PO BOX 100 29 Helsinki	+358 9 471 977 +358 800 147 111	
Greece	Poisons Information Centre Children's Hospital P&A Kyriakou	11762 Athens	+30 2 10 779 3777	
Greece	Department of Forensic Medicine & Toxicology Aristotle University of Thessaloniki, Medical Faculty	54006 Thessaloniki		
Latvia	Valsts Toksikoloģijas centrs, Saindēšanās un zāļu informācijas centrs	Hipokrāta 2 1038 Rīga	+371 67 04 24 73	
Lithuania	Apsinuodijimų informacijos biuras	Birutės g. 56 8110 Vilnius	+370 5 236 20 52 +370 687 53378	
Luxembourg	Centre Anti-Poisons/Antigifocentrum c/o Hôpital Central de la Base - Reine Astrid	Rue Bruyn 1 1120 Bruxelles/Brussel	+352 8002 5500	
Malta	Medicines & Poisons Info Office	Mater Dei Hospital MSD Msida	+356 2545 6504	
Norway	Giftinformasjonen Helsedirektoratet	P.O. Box 7000 St. Olavs Plass 130 Oslo	+47 22 591300	

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Slovakia	Národné toxikologické informačné centrum Univerzitná nemocnica Bratislava, pracovisko Kramáre, Klinika pracovného lekárstva a toxikológie	Limbová 5 833 05 Bratislava	+421 2 54 77 41 66	
Slovenia	Center za klinično toksikologijo in farmakologijo Interna klinika, UKCL	Zaloška cesta 7 1525 Ljubljana	+386 41 650 500	
Sweden	Giftinformationscentralen	Box 60 500 171 76 Stockholm	112 – begär Giftinformation +46 10 456 6700 (Från utlandet)	
Switzerland	Tox Info Suisse	Freiestrasse 16 8032 Zürich	145	(from abroad: +41 44 251 51 51) non urgent inquiry: +41 44 251 66 66
Turkey	Ulusal Zehir Merkezi (UZEM) Refik Saydam Hıfzıssıhha Merkezi Başkanlığı	Cemal Gürsel Cd. No: 18 Sıhhiye Çankaya 06590 Ankara	114	Information is provided to public and medical personnel on poisoning incidents via 114.
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH Birmingham	0344 892 0111	
United Kingdom	National Poisons Information Service (Cardiff Centre) Gwenwyn Ward, Llandough Hospital	Penarth CF64 2XX Cardiff	0344 892 0111	
United Kingdom	National Poisons Information Service Edinburgh Royal Infirmary of Edinburgh	Little France Crescent EH16 4SA Edinburgh	0344 892 0111	
United Kingdom	Guy's & St Thomas' Poisons Unit Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust	Avonley Road SE14 5ER London	+44 20 7188 7188	
United Kingdom	National Poisons Information Service (Newcastle Centre) Regional Drugs and Therapeutics Centre, Wolfson Unit	Claremont Place Newcastle-upon-Tyne NE1 4LP Newcastle	0344 892 0111	
United Kingdom	National Poisons Information Service (Belfast Centre) Royal Victoria Hospital	Grosvenor Road BT12 6BA Belfast	0344 892 0111	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute toxicity (oral), Category 4 H302

Specific target organ toxicity — Repeated exposure, Category 2 H373

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

May cause damage to organs through prolonged or repeated exposure. Harmful if swallowed.

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2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS07

GHS08

Signal word (CLP) :

Warning

Hazard statements (CLP) :

H302 - Harmful if swallowed.

H373 - May cause damage to organs (kidneys) through prolonged or repeated exposure.

Precautionary statements (CLP) :

P260 - Do not breathe dust/fume/gas/mist/vapours/spray.

P264 - Wash hands, forearms and face thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P301+P312 - IF SWALLOWED: Call a POISON CENTRE or doctor if you feel unwell.

P314 - Get medical advice/attention if you feel unwell.

P330 - Rinse mouth.

P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
ETHYLENE GLYCOL	(CAS-No.) 107-21-1 (EC-No.) 203-473-3 (EC Index-No.) 603-027-00-1 (REACH-no) 01-2119456816-28-0025	> 98.5	Acute Tox. 4 (Oral), H302 STOT RE 2, H373

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general :

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Call a poison center or a doctor if you feel unwell.

First-aid measures after inhalation :

Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact :

Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents without medical advice. Take victim to a doctor if irritation persists. Wash skin with plenty of water.

First-aid measures after eye contact :

Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply (chemical) neutralizing agents without medical advice. Rinse eyes with water as a precaution.

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First-aid measures after ingestion : Rinse mouth with water. Do not apply (chemical) neutralizing agents without medical advice. Call Poison Information Centre (www.big.be/antigif.html). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Take the container/vomit to the doctor/hospital. Doctor: gastric lavage. Rinse mouth. Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects : May cause damage to organs (kidneys) through prolonged or repeated exposure.
Symptoms/effects after inhalation : EXPOSURE TO HIGH CONCENTRATIONS: Dry/sore throat.
Symptoms/effects after skin contact : No effects known.
Symptoms/effects after eye contact : ON CONTINUOUS EXPOSURE/CONTACT: Redness of the eye tissue. Lacrimation.
Symptoms/effects after ingestion : AFTER INGESTION OF HIGH QUANTITIES: Nausea. Headache. Vomiting. Dizziness. Disturbances of consciousness. Central nervous system depression. Feeling of weakness. Narcosis. Gastrointestinal complaints. Change in the haemogramme/blood composition. Visual disturbances. Cramps/uncontrolled muscular contractions. Blue/grey discolouration of the skin. Disturbed motor response. Drunkenness. Decreased renal function. Low arterial pressure. Disturbed tactile sensibility. Accelerated heart action. Brain affection. Rapid respiration. Change in urine composition. Change in urine output. Difficulty in swallowing.
Chronic symptoms : Affection of the renal tissue.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Quick-acting ABC powder extinguisher. Quick-acting BC powder extinguisher. Quick-acting class B foam extinguisher. Quick-acting CO2 extinguisher. Class B foam (alcohol-resistant). Water spray if puddle cannot expand. Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media : Water (quick-acting extinguisher, reel); risk of puddle expansion. Water; risk of puddle expansion.

5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD: Combustible. INDIRECT FIRE HAZARD: Temperature above flashpoint: higher fire/explosion hazard.
Explosion hazard : INDIRECT EXPLOSION HAZARD: Reactions with explosion hazards: see "Reactivity Hazard".
Hazardous decomposition products in case of fire : Upon combustion: CO and CO2 are formed.

5.3. Advice for firefighters

Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: seal off low-lying areas. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions : Cool tanks/drums with water spray/remove them into safety.
Protection during firefighting : Heat/fire exposure: compressed air apparatus (EN 136 + EN 137). Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Gloves (EN 374). Protective clothing (EN 14605 or EN 13034).
Emergency procedures : Ventilate spillage area. Mark the danger area. No naked flames. Wash contaminated clothes. Do not breathe dust/fume/gas/mist/vapours/spray. Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

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Emergency procedures : Evacuate unnecessary personnel. Keep away from combustible material. Stop leak if safe to do so. Do not touch spilled material. All equipment used when handling the product must be grounded. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Ventilate area. Isolate leaked material using non-flammable absorption agent.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Contain released product, pump into suitable containers. Plug the leak, cut off the supply.
Methods for cleaning up : Take up liquid spill into absorbent material. Take up liquid spill into a non combustible material e.g.: sand, earth, vermiculite or powdered limestone. Scoop absorbed substance into closing containers. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.
Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. Keep away from naked flames/heat. Use earthed equipment. In finely divided state: use spark-/explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Clean contaminated clothing. Keep container tightly closed. Do not breathe dust/fume/gas/mist/vapours/spray.
Hygiene measures : Observe normal hygiene standards. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a well-ventilated place. Keep cool.
Maximum storage period : 12 months
Storage temperature : < 40 °C
Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources.
Information on mixed storage : KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. (strong) acids. (strong) bases. water/moisture.
Storage area : Meet the legal requirements. Under a shelter/in the open. Underground. Store in a dry area. Keep container in a well-ventilated place. May be stored under nitrogen.
Special rules on packaging : SPECIAL REQUIREMENTS: closing. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials : SUITABLE MATERIAL: stainless steel. carbon steel. steel with plastic inner lining. glass. high density polyethylene (HDPE). Plastic packaging.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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EU - Occupational Exposure Limits

Local name	Ethylene glycol
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IOELV TWA (mg/m ³)	52 mg/m ³
IOELV TWA (ppm)	20 ppm
IOELV STEL (mg/m ³)	104 mg/m ³
IOELV STEL (ppm)	40 ppm
Notes	Skin
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC

Czech Republic - Occupational Exposure Limits

Local name	Ethylenglykol (Ethan-1,2-diol)
Expoziční limity (PEL) (mg/m ³)	50 mg/m ³
Expoziční limity (PEL) (ppm)	20 ppm
Expoziční limity (NPK-P) (mg/m ³)	100 mg/m ³
Expoziční limity (NPK-P) (ppm)	39 ppm
Remark (CZ)	D - při expozici se významně uplatňuje pronikání faktoru kůží.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 41/2020 Sb.)

Denmark - Occupational Exposure Limits

Local name	Ethylenglycol (1,2-Ethandiol; Glycol)
Grænseværdi (8 timer) (mg/m ³)	26 mg/m ³ 10 mg/m ³ forstøvet
Grænseværdi (8 timer) (ppm)	10 ppm
Anmærkninger (DK)	E (betyder, at stoffet har en EF-grænseværdi); H (betyder, at stoffet kan optages gennem huden)
Regulatory reference	BEK nr 1458 af 13/12/2019

Finland - Occupational Exposure Limits

Local name	1,2-Etaanidioli
HTP-arvo (8h) (mg/m ³)	50 mg/m ³
HTP-arvo (8h) (ppm)	20 ppm
HTP-arvo (15 min)	100 mg/m ³
HTP-arvo (15 min) (ppm)	40 ppm
Huomautus (FI)	Iho
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden tutkimuskeskus)

Germany - Occupational Exposure Limits (TRGS 900)

TRGS 900 Local name	Ethandiol
Occupational exposure limit value (mg/m ³)	26 mg/m ³
Occupational exposure limit value (ppm)	10 ppm
Peak exposure limitation factor	2(l)
TRGS 900 Remark	DFG;EU;H;Y;11
TRGS 900 Regulatory reference	TRGS900

Hungary - Occupational Exposure Limits

Local name	ETILÉNGLIKOL
AK-érték	52 mg/m ³
CK-érték	104 mg/m ³

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Megjegyzések (HU)	b (Bőrön át is felszívódik), i (Ingerlő anyag, amely irritálja a bőrt, nyálkahártyát, szemet vagy mindhármát); EU1 (2000/39/EK irányelvben közölt érték); N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről

Netherlands - Occupational Exposure Limits

Local name	Ethaan-1,2-diol
Grenswaarde TGG 8H (mg/m ³)	52 mg/m ³ (damp) 10 mg/m ³ (druppels)
Grenswaarde TGG 8H (ppm)	20 ppm 3.9 ppm
Grenswaarde TGG 15MIN (mg/m ³)	104 mg/m ³ (damp)
Grenswaarde TGG 15MIN (ppm)	40 ppm
Remark (MAC)	H (Huidopname) Stoffen die relatief gemakkelijk door de huid kunnen worden opgenomen, hetgeen een substantiële bijdrage kan betekenen aan de totale inwendige blootstelling, hebben in de lijst een H-aanduiding. Bij deze stoffen moeten naast maatregelen tegen inademing ook adequate maatregelen ter voorkoming van huidcontact worden genomen.
Regulatory reference	Arbeidsomstandighedenregeling 2020

Sweden - Occupational Exposure Limits

Local name	Etylenglykol (Glykol)
nivågränsvärde (NVG) (mg/m ³)	25 mg/m ³
nivågränsvärde (NVG) (ppm)	10 ppm
kortidsvärde (KTV) (mg/m ³)	104 mg/m ³
kortidsvärde (KTV) (ppm)	40 ppm
Anmärkning (SE)	H (Ämnet kan lätt upptas genom huden. Det föreskrivna gränsvärdet bedöms ge tillräckligt skydd endast under förutsättning att huden är skyddad mot exponering för ämnet ifråga); 26 (Gränsvärdet gäller den sammanlagda koncentrationen av ånga och aerosol)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)

United Kingdom - Occupational Exposure Limits

Local name	Ethane-1,2-diol
WEL TWA (mg/m ³)	10 mg/m ³ particulate 52 mg/m ³ vapour
WEL TWA (ppm)	20 ppm vapour
WEL STEL (mg/m ³)	104 mg/m ³ vapour
WEL STEL (OEL STEL) [ppm]	40 ppm vapour
Remark (WEL)	Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

Switzerland - Occupational Exposure Limits

Local name	Ethylèneglycol / Ethylenglykol
MAK (mg/m ³)	26 mg/m ³
MAK (ppm)	10 ppm
KZGW (mg/m ³)	52 mg/m ³
KZGW (ppm)	20 ppm

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Critical toxicity	VRS, Yeux / OAW, Auge
Notation	R, SS _c / H, SS _c
Regulatory reference	www.suva.ch, 01.01.2020

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

DNEL/DMEL (Workers)

Long-term - systemic effects, dermal	106 mg/kg bodyweight/day
Long-term - local effects, inhalation	35 mg/m ³

DNEL/DMEL (General population)

Long-term - systemic effects, dermal	53 mg/kg bodyweight/day
Long-term - local effects, inhalation	7 mg/m ³

PNEC (Water)

PNEC aqua (freshwater)	10 mg/l
PNEC aqua (marine water)	1 mg/l
PNEC aqua (intermittent, freshwater)	10 mg/l

PNEC (Sediment)

PNEC sediment (freshwater)	37 mg/kg dwt
PNEC sediment (marine water)	3.7 mg/kg dwt

PNEC (Soil)

PNEC soil	1.53 mg/kg dwt
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PNEC (STP)

PNEC sewage treatment plant	199.5 mg/l
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8.2. Exposure controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

Personal protective equipment:

Gloves. Protective clothing.

Materials for protective clothing:

GIVE EXCELLENT RESISTANCE: nitrile rubber. chloroprene rubber. butyl rubber. natural rubber. neoprene. polyethylene. PVC. tetrafluoroethylene. viton. polyethylene/ethylenevinylalcohol. GIVE GOOD RESISTANCE: chlorinated polyethylene. polyurethane. PVA

Hand protection:

Protective gloves against chemicals (EN 374)

Eye protection:

Safety glasses

Skin and body protection:

Protective clothing (EN 14605 or EN 13034)

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according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Respiratory protection:

Full face mask with filter type A at conc. in air > exposure limit

Personal protective equipment symbol(s):



Environmental exposure controls:

Avoid release to the environment.

Other information:

Do not eat, drink or smoke when using this product. Do not breathe aerosol, spray, vapours.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear, colorless liquid.
Molecular mass	: 62.07 g/mol
Colour	: Colourless.
Odour	: Almost odourless.
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: -13 °C
Freezing point	: No data available
Boiling point	: 197.4 °C Atm. press.: 1013 hPa
Flash point	: 111 °C Atm. press.: 1013,25 hPa
Critical temperature	: 372 °C
Auto-ignition temperature	: 398 °C (1013 hPa, T2)
Decomposition temperature	: > 500 °C
Flammability (solid, gas)	: Not applicable
Vapour pressure	: 0.123 hPa Temp.: 25 °C
Relative vapour density at 20 °C	: 2.1
Relative density	: 1.11 (20 °C)
Density	: 1.11 g/cm ³ Type: 'density' Temp.: 20 °C
Solubility	: Soluble in water. Soluble in ethanol. Soluble in acetone. Soluble in acetic acid. Soluble in glycerol. Soluble in pyridine. Water: 100 g/100ml (20 °C) Ethanol: complete Acetone: complete
Partition coefficient n-octanol/water (Log Pow)	: -1.34 (Experimental value)
Viscosity, kinematic	: 14.505 mm ² /s
Viscosity, dynamic	: 16.1 mPa·s Temp.: 'other:25.0°C' Parameter: 'dynamic viscosity (in mPa s)'
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

9.2. Other information

Specific conductivity	: 116 µS/m
Saturation concentration	: 0.31 g/m ³
VOC content	: 0 %
Other properties	: Gas/vapour heavier than air at 20°C. Clear. Hygroscopic. Slightly volatile. Neutral reaction.
Additional information	: Hygroscopic liquid

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SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Violent to explosive reaction with (some) acids. Reacts on exposure to temperature rise with (some) bases. Reacts on exposure to water and heat with (some) metals.

10.2. Chemical stability

Hygroscopic.

10.3. Possibility of hazardous reactions

Stable under normal conditions of use. Refer to section 10.1 on Reactivity.

10.4. Conditions to avoid

heat. Water, humidity. No flames, no sparks. Eliminate all sources of ignition. Moisture.

10.5. Incompatible materials

Combustible materials. Oxidizing agent. Strong acids. Strong bases. Organic materials.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified.

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

LD50 oral rat	7712 mg/kg bodyweight Animal: rat
LD50 dermal	> 3500 mg/kg bodyweight (Mouse, Male / female, Experimental value, Dermal)
LC50 Inhalation - Rat	> 2.5 mg/l (6 h, Rat, Male / female, Experimental value, Inhalation (aerosol))

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)
Serious eye damage/irritation : Not classified (Based on available data, the classification criteria are not met)
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

NOAEL (chronic, oral, animal/male, 2 years)	1500 mg/kg bodyweight Animal: mouse, Animal sex: male, Remarks on results: other:Effect type: carcinogenicity (migrated information)
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure	: Not classified (Conclusive but not sufficient for classification)
STOT-repeated exposure	: May cause damage to organs (kidneys) through prolonged or repeated exposure.
Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

Viscosity, kinematic	14.505 mm ² /s
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ETHYLENE GLYCOL (Premium Grade, First Grade)

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Potential adverse human health effects and symptoms	: Harmful if swallowed. Not irritant to skin. Practically non-toxic in contact with skin (LD50 skin > 2000 mg/kg). Slightly harmful by inhalation. Not irritant to eyes. Caution! Substance is absorbed through the skin.
Other information	: Likely route of exposure: ingestion, skin and eye. Information on Effects: refer to section 4.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.
Ecology - air	: Not included in the list of substances which may contribute to the greenhouse effect (IPCC). Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water	: Slightly harmful to crustacea (Daphnia). Not harmful to fishes. Groundwater pollutant. Not harmful to algae.
Hazardous to the aquatic environment, short-term (acute)	: Not classified
Hazardous to the aquatic environment, long-term (chronic)	: Not classified
Not rapidly degradable	

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

LC50 fish 1	72860 mg/l Test organisms (species): Pimephales promelas
EC50 Daphnia 1	> 100 mg/l Test organisms (species): Daphnia magna
EC50 96h algae (1)	3536 mg/l Test organisms (species): other:greenn algae
EC50 96h algae (2)	6500 – 13000 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
NOEC (chronic)	≥ 1000 mg/l Test organisms (species): Americamysis bahia (previous name: Mysidopsis bahia) Duration: '23 d'

12.2. Persistence and degradability

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

Persistence and degradability	Biodegradable in the soil. Readily biodegradable in water.
Biochemical oxygen demand (BOD)	0.47 g O ₂ /g substance
Chemical oxygen demand (COD)	1.24 g O ₂ /g substance
ThOD	1.29 g O ₂ /g substance

12.3. Bioaccumulative potential

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

Partition coefficient n-octanol/water (Log Pow)	-1.34 (Experimental value)
Bioaccumulative potential	Not bioaccumulative.

12.4. Mobility in soil

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

Surface tension	48.4 mN/m (20 °C)
Ecology - soil	Highly mobile in soil.

12.5. Results of PBT and vPvB assessment

ETHYLENE GLYCOL (Premium Grade, First Grade) (107-21-1)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

ETHYLENE GLYCOL (Premium Grade, First Grade)

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according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Do not discharge into drains or the environment. Dispose of at authorized waste collection point. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals.
Additional information	: Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.
European List of Waste (LoW) code	: 15 01 10* - packaging containing residues of or contaminated by dangerous substances 07 01 04* - other organic solvents, washing liquids and mother liquors

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available				

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

Inland waterway transport

Not regulated

Rail transport

Not regulated

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

Not applicable

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SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

ETHYLENE GLYCOL (Premium Grade, First Grade) is not on the REACH Candidate List

ETHYLENE GLYCOL (Premium Grade, First Grade) is not on the REACH Annex XIV List

ETHYLENE GLYCOL (Premium Grade, First Grade) is not subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

ETHYLENE GLYCOL (Premium Grade, First Grade) is not subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

VOC content : 0 %

15.1.2. National regulations

Germany

Employment restrictions : Observe restrictions according Act on the Protection of Working Mothers (MuSchG)
Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG)

Water hazard class (WGK) : WGK 1, Slightly hazardous to water (Classification according to AwSV; ID No. 105)

Hazardous Incident Ordinance (12. BImSchV) : Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

ABM category : B(5) - low hazard for aquatic organisms

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

Denmark

Danish National Regulations : Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product
The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

Section	Changed item	Change	Comments
2.1	08/02/2011	1-16, Annex I, II	First edition created according to recommendations of Regulations (EC) #1907/2006
3.0	04/04/2018	1-16, Annex	SDS has been corrected in according to new contact information, data of Registration dossier and Chemical Safety Report
3.1	16/01/2020	Title, 1, 3.1	New trade names were added
4.0	28/10/2020	All	All sections were updated, the document format was changed.

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Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BLV	Biological limit value
CAS-No.	Chemical Abstract Service number
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
EC-No.	European Community number
EN	European Standard
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative
WGK	Water Hazard Class

Full text of H- and EUH-statements:

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
H302	Harmful if swallowed.
H373	May cause damage to organs through prolonged or repeated exposure.

Full text of use descriptors

ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC3	Formulation into solid matrix
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5	Use at industrial site leading to inclusion into/onto article

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ERC6a	Use of intermediate
ERC6b	Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC6c	Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC6d	Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
ERC7	Use of functional fluid at industrial site
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8c	Widespread use leading to inclusion into/onto article (indoor)
ERC8d	Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f	Widespread use leading to inclusion into/onto article (outdoor)
ERC9a	Widespread use of functional fluid (indoor)
ERC9b	Widespread use of functional fluid (outdoor)
PC1	Adhesives, sealants
PC15	Non-metal-surface treatment products
PC16	Heat Transfer Fluids
PC17	Hydraulic Fluids
PC18	Ink and Toners
PC23	Leather treatment products
PC29	Pharmaceuticals
PC31	Polishes and wax blends
PC32	Polymer preparations and compounds
PC34	Textile dyes, and impregnating products
PC35	Washing and cleaning products
PC4	Anti-Freeze and De-icing products
PC8	Biocidal products
PC9a	Coatings and paints, thinners, paint removers
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC10	Roller application or brushing
PROC11	Non-industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC17	Lubrication at high energy conditions in metal working operations
PROC18	General greasing /lubrication at high kinetic energy conditions
PROC19	Manual activities involving hand contact
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC20	Use of functional fluids in small devices
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC6	Calendering operations
PROC7	Industrial spraying
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
SU0	Other
SU2a	Mining (without offshore industries)
SU2b	Offshore industries

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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Annex to the safety data sheet

Product exposure scenario(s)

ES Type	ES title
Worker	Manufacture of substances
Worker	Use as an intermediate
Worker	Use as process chemical
Worker	Distribution of substance
Worker	Formulation & (re)packing of substances and mixtures
Worker	Production of polymers
Worker	Use in Paints/ Coatings
Worker	Use in Paints/ Coatings /Adhesives/ Sealants/ Foams/ Polymers / filled Polymers
Consumer	Use in Paints/ Coatings / Surface treatment products
Worker	Use in Cleaning Agents
Worker	Use in Cleaning Agents
Consumer	Use in Cleaning Agents
Worker	Use in lubricants
Worker	Use in metal working fluids
Worker	Use in metal working fluids
Worker	Use in Agrochemicals
Worker	Use in/as Functional fluids
Worker	Use in/as Functional fluids
Consumer	Use in heat transfer and hydraulic fluids
Worker	Use in/as de-icing/anti-icing applications/agents
Consumer	Use in/as de-icing/anti-icing applications/agents
Worker	Use in laboratories
Worker	Use in laboratories
Worker	Use in water treatment agents
Consumer	Consumer use in adhesives and sealants
Worker	Production of Polymers, filled polymers, foams, coatings, adhesives, sealants
Consumer	Production of rigid foam
Consumer	Use in biocidal products
Worker	Use in water treatment agents
Worker	Use as Oilfield chemicals

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

1. ES-1: Manufacture of substances

1.1. Title section

Manufacture of substances

ES Ref.: ES-1
ES Type: Worker

Company ES code: ES-1
Association ref code: IM-1

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-5	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-6	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-7	Use as laboratory reagent	PROC15

Processes, tasks, activities covered

Industrial useX
ManufactureX

Assessment method

EasyTRA 4.1.0

1.2. Conditions of use affecting exposure

1.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product (article) characteristics

Physical form of product	Liquid, Clear, colorless liquid
Concentration of substance in product	100 %
Vapour pressure	0.123 hPa
Dustiness	fugacity, High
Viscosity, dynamic	16 mPa·s

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

Covers exposure up to
Exposure duration

5 days/week
> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
------------------------	------

Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
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Temperature, Assumes process temperature up to	200 % °C
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Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

1.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
--------------------------	--------

Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Dustiness	fugacity, High
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
------------------------	------

Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
-------------------------------	--------------------

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Temperature, Assumes process temperature up to	200 % °C
--	----------

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

1.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

1.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

1.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
---------------------------	--------------------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	960 cm ²
Indoor use	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

1.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

1.2.7. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

1.3. Exposure estimation and reference to its source

1.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000797	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.002	

1.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	
Inhalation - Long-term - systemic effects	6.465 mg/m ³	0.184726	
Sum RCR - Long-term - systemic effects		0.198	

1.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

1.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

1.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

1.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

1.3.7. Worker exposure Use as laboratory reagent (PROC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

1.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

1.4.1. Environment

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

1.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

2. ES-2: Use as an intermediate

2.1. Title section

Use as an intermediate

ES Ref.: ES-2
ES Type: Worker

Company ES code: ES-2
Association ref code: I-2

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC5
CS-6	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-8	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9
CS-9	Use as laboratory reagent	PROC15

Processes, tasks, activities covered

Industrial useX

Assessment method

EasyTRA 4.1.0

2.2. Conditions of use affecting exposure

2.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.2.5. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.2.7. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 Pa
Dustiness	fugacity, Low

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.2.8. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.2.9. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

2.3. Exposure estimation and reference to its source

2.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

2.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

2.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

2.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

2.3.5. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/kg bw/day	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

2.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

2.3.7. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

2.3.8. Worker exposure Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/kg bw/day	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

2.3.9. Worker exposure Use as laboratory reagent (PROC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

2.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

2.4.1. Environment

No data available

2.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

3. ES-3: Use as process chemical

3.1. Title section

Use as process chemical

ES Ref.: ES-3
ES Type: Worker

Company ES code: ES-3

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).	PROC5
CS-6	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS-7	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS-8	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-9	Treatment of articles by dipping and pouring	PROC13
CS-10	Tableting, compression, extrusion, pelettisation, granulation	PROC14
CS-11	Use as laboratory reagent	PROC15

Processes, tasks, activities covered

Industrial useX

Assessment method

EasyTRA 4.1.0

3.2. Conditions of use affecting exposure

3.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Use in batch and other process (synthesis) where opportunity for exposure arises

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.5. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.6. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.7. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.8. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
-------	---

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.9. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.10. Control of worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)

PROC14	Tableting, compression, extrusion, pelettisation, granulation
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

3.2.11. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Dustiness	fugacity, Low
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

3.3. Exposure estimation and reference to its source

3.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

3.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

3.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

3.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

3.3.5. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

3.3.6. Worker exposure Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

3.3.7. Worker exposure Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

3.3.8. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

3.3.9. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Sum RCR - Long-term - systemic effects		0.752	
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3.3.10. Worker exposure Tableting, compression, extrusion, pelettisation, granulation (PROC14)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	3.429 mg/kg bw/day	0.032345	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.402	

3.3.11. Worker exposure Use as laboratory reagent (PROC15)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

3.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

3.4.1. Environment

No data available

3.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

4. ES-4: Distribution of substance

4.1. Title section

Distribution of substance

ES Ref.: ES-4
ES Type: Worker

Company ES code: ES-4

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-5	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-6	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-7	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9
CS-8	Use as laboratory reagent	PROC15

Processes, tasks, activities covered	Industrial useX ManufactureX
Assessment method	EasyTRA 4.1.0

4.2. Conditions of use affecting exposure

4.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

4.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

4.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

4.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

4.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

4.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

4.2.7. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

4.2.8. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

4.3. Exposure estimation and reference to its source

4.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

4.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

4.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

4.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

4.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

4.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

4.3.7. Worker exposure Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

4.3.8. Worker exposure Use as laboratory reagent (PROC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

4.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.4.1. Environment

No data available

4.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

5. ES-5: Formulation & (re)packing of substances and mixtures

5.1. Title section

Formulation & (re)packing of substances and mixtures

ES Ref.: ES-5
ES Type: Worker

Company ES code: ES-5

Worker		
CS-2	Use in closed process, no likelihood of exposure	PROC1
CS-3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-4	Use in closed batch process (synthesis or formulation)	PROC3
CS-5	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-6	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).	PROC5
CS-7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-8	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9
CS-10	Production of preparations or articles by tableting, compression, extrusion, pelletisation.	PROC14
CS-11	Use as laboratory reagent	PROC15

Processes, tasks, activities covered	Industrial useX FormulationX
Assessment method	EasyTRA 4.1.0

5.2. Conditions of use affecting exposure

5.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.5. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Protective gloves. Assigned Protection Factor (APF) of 10

90 %
Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:

Palm of both hands

Indoor use

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a

Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Product (article) characteristics

Physical form of product

Liquid

Concentration of substance in product

100 %

Vapour pressure

0.008 hPa

Dustiness

fugacity, Low

Viscosity, dynamic

30 mPa·s

Viscosity, kinematic

33 mm²/s

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

Covers exposure up to

> 5 days/week

Exposure duration

> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation

90%. Effectiveness

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

Respiratory protection

None

Protective gloves

None

Other conditions affecting workers exposure

Exposed skin surface assumed:

Both hands

Indoor use

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.7. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b

Transfer of substance or mixture (charging and discharging) at dedicated facilities

Product (article) characteristics

Physical form of product

Liquid

Concentration of substance in product

100 %

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to Exposure duration	> 5 days/week > 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.8. Control of worker exposure: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to Exposure duration	> 5 days/week > 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.9. Control of worker exposure: Production of preparations or articles by tableting, compression, extrusion, pelletisation. (PROC14)

PROC14	Tableting, compression, extrusion, pelettisation, granulation
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.2.10. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

5.3. Exposure estimation and reference to its source

5.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

5.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

5.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

5.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

5.3.5. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

5.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

5.3.7. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

5.3.8. Worker exposure Transfer of substance or preparation into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

5.3.9. Worker exposure Production of preparations or articles by tableting, compression, extrusion, pelletisation. (PROC14)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	3.429 mg/kg bw/day	0.032345	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.402	

5.3.10. Worker exposure Use as laboratory reagent (PROC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

5.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

5.4.1. Environment

No data available

5.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

6. ES-6: Production of polymers

6.1. Title section

Production of polymers

ES Ref.: ES-6
ES Type: Worker

Company ES code: ES-6

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).	PROC5
CS-6	Calendering operations	PROC6
CS-7	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS-8	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS-9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-10	Use as laboratory reagent	PROC15

Processes, tasks, activities covered

Industrial useX

Assessment method

EasyTRA 4.1.0

6.2. Conditions of use affecting exposure

6.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Use in batch and other process (synthesis) where opportunity for exposure arises

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.5. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.6. Control of worker exposure: Calendering operations (PROC6)

PROC6	Calendering operations
-------	------------------------

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.7. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.8. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.9. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.2.10. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

6.3. Exposure estimation and reference to its source

6.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

6.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

6.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

6.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

6.3.5. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

6.3.6. Worker exposure Calendering operations (PROC6)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.395	

6.3.7. Worker exposure Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

6.3.8. Worker exposure Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

6.3.9. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

6.3.10. Worker exposure Use as laboratory reagent (PROC15)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

6.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

6.4.1. Environment

No data available

6.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

7. ES-7: Use in Paints/ Coatings

7.1. Title section

Use in Paints/ Coatings

ES Ref.: ES-7
ES Type: Worker

Company ES code: ES-7

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).	PROC5
CS-6	Industrial spraying	PROC7
CS-7	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS-8	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS-9	Roller application or brushing	PROC10
CS-10	Treatment of articles by dipping and pouring	PROC13
CS-11	Use as laboratory reagent	PROC15

Processes, tasks, activities covered

Industrial useX

Assessment method

EasyTRA 4.1.0

7.2. Conditions of use affecting exposure

7.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Use in batch and other process (synthesis) where opportunity for exposure arises

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.5. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.6. Control of worker exposure: Industrial spraying (PROC7)

PROC7	Industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.7. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
---------------------------	--------------------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.8. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.9. Control of worker exposure: Roller application or brushing (PROC10)

PROC10	Roller application or brushing
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
---------------------------	--------------------

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.10. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

7.2.11. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

7.3. Exposure estimation and reference to its source

7.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	350.000739	EASY TRA
Sum RCR - Long-term - systemic effects		350.001	

7.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

7.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	13.265 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

7.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

7.3.5. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

7.3.6. Worker exposure Industrial spraying (PROC7)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	54.6 mg/kg bw/day	0.515094	EASY TRA
Inhalation - Long-term - systemic effects	13 mg/m ³	0.371429	EASY TRA
Sum RCR - Long-term - systemic effects		0.887	

7.3.7. Worker exposure Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

7.3.8. Worker exposure Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

7.3.9. Worker exposure Roller application or brushing (PROC10)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	25.862 ppm	0.738902	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Sum RCR - Long-term - systemic effects		0.765	
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7.3.10. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

7.3.11. Worker exposure Use as laboratory reagent (PROC15)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

7.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

7.4.1. Environment

No data available

7.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

8. ES-8: Use in Paints/ Coatings /Adhesives/ Sealants/ Foams/ Polymers / filled Polymers

8.1. Title section

Use in Paints/ Coatings /Adhesives/ Sealants/ Foams/ Polymers / filled Polymers

ES Ref.: ES-8 ES Type: Worker	Company ES code: ES-8
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Worker		
CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).	PROC5
CS-6	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a
CS-7	Transfer of substance or mixture (charging and discharging) at dedicated facilities	PROC8b
CS-8	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-9	Roller application or brushing	PROC10
CS-10	Non-industrial spraying	PROC11
CS-11	Treatment of articles by dipping and pouring	PROC13
CS-12	Tabletting, compression, extrusion, pelettisation, granulation	PROC14
CS-13	Use as laboratory reagent	PROC15
CS-14	Hand-mixing with intimate contact and only PPE available	PROC19

Processes, tasks, activities covered	Professional useX
Assessment method	EasyTRA 4.1.0

8.2. Conditions of use affecting exposure

8.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

8.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	Use in batch and other process (synthesis) where opportunity for exposure arises

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.5. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Ventilation, Good	30 % Effectiveness
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.6. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Dustiness	fugacity, Low
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	80%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

8.2.7. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.8. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Ventilation, Good	30 % Effectiveness
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.9. Control of worker exposure: Roller application or brushing (PROC10)

PROC10	Roller application or brushing
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Dustiness	fugacity, Low
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	80%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

8.2.10. Control of worker exposure: Non-industrial spraying (PROC11)

PROC11	Non-industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	90 % Effectiveness
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Two hands and upper wrists
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.11. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.12. Control of worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)

PROC14	Tableting, compression, extrusion, pelettisation, granulation
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

8.2.13. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.2.14. Control of worker exposure: Hand-mixing with intimate contact and only PPE available (PROC19)

PROC19	Manual activities involving hand contact
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 15 min/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	1980 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

8.3. Exposure estimation and reference to its source

8.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

8.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

8.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	350.221671	EASY TRA
Sum RCR - Long-term - systemic effects		350.228	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

8.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

8.3.5. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.868	

8.3.6. Worker exposure Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

8.3.7. Worker exposure Transfer of substance or mixture (charging and discharging) at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.868	

8.3.8. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

8.3.9. Worker exposure Roller application or brushing (PROC10)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.395	

8.3.10. Worker exposure Non-industrial spraying (PROC11)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	53.75 mg/kg bw/day	0.507075	EASY TRA
Inhalation - Long-term - systemic effects	6.9 mg/m ³	0.197143	EASY TRA
Sum RCR - Long-term - systemic effects		0.704	

8.3.11. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

8.3.12. Worker exposure Tableting, compression, extrusion, pelettisation, granulation (PROC14)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	3.429 mg/kg bw/day	0.032345	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Sum RCR - Long-term - systemic effects		0.771	
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8.3.13. Worker exposure Use as laboratory reagent (PROC15)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

8.3.14. Worker exposure Hand-mixing with intimate contact and only PPE available (PROC19)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	14.143 mg/kg bw/day	0.133423	EASY TRA
Inhalation - Long-term - systemic effects	6.465 mg/m ³	0.184726	EASY TRA
Sum RCR - Long-term - systemic effects		0.318	

8.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

8.4.1. Environment

No data available

8.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

9. ES-9: Use in Paints/ Coatings / Surface treatment products

9.1. Title section

Use in Paints/ Coatings / Surface treatment products

ES Ref.: ES-9
ES Type: Consumer

Company ES code: ES-9
Association ref code: PW-9

Consumer		
CS-1	Use in Paints/Coatings - non-spraying products	PC9a
CS-2	Use in Paints/Coatings - non-spraying products	PC15
CS-3	Use in Paints/Coatings - spraying products	PC9a
CS-4	Use in Paints/Coatings - spraying products	PC15
CS-5	Use in Printing inks- Part A. Refilling of toners (cartridges)	PC18
CS-6	Use in Printing inks- Part B. Printing process	PC18
CS-7	Use in leather furniture sprays	PC23
CS-8	Leather tanning, dye, finishing, impregnation and care products – Shoe cream	PC23
CS-9	Use in surface treatment products – non-spraying products	PC31
CS-10	Leather tanning, dye, finishing, impregnation and care products – Shoe cream	PC34
CS-11	Textile dyes, finishing and impregnation products / Textile dyes - powder - Hand wash - Part B;	PC34
CS-12	Textile dyes, finishing and impregnation products / Textile dyes - powder - Residues on clothing (leaching) - Part C;	PC34
CS-13	Textile dyes, finishing and impregnation products / Textile dyes - liquid - Machine wash - Part A;	PC34
CS-14	Textile dyes, finishing and impregnation products / Textile dyes - liquid - Hand wash - Part B;	PC34
CS-15	Textile dyes, finishing and impregnation products / Textile dyes - liquid - Residues on clothing (leaching) - Part C;	PC34
CS-16	Textile dyes, finishing and impregnation products / Textile dyes - impregnation sprays - Spraying - Part A;	PC34
CS-17	Textile dyes, finishing and impregnation products / Textile dyes - impregnation sprays - Leaving on - Part B;	PC34

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Processes, tasks, activities covered	Consumer useX
Assessment method	ConsExpo

9.2. Conditions of use affecting exposure

9.2.1. Control of consumer exposure: Use in Paints/Coatings - non-spraying products (PC9a)

PC9a	Coatings and paints, thinners, paint removers
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	1.25 kg
Use frequency	1 uses per day
Inhalation,Exposure time	132 minutes
Application duration	120 minutes
Release duration	7200 Seconds

Other conditions affecting consumer exposure

Exposed skin surface assumed:	Hands and forearms
Contact rate	0.00003 kg/min
Inhalation,Assumes a room volume of maximum	20 m ³
Inhalation,Ventilation rate	0.6 m ³
Inhalation,Release area	100000 cm ²
Inhalation,Temperature	25 °C
Dermal,Protective gloves	0 %
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.2. Control of consumer exposure: Use in Paints/Coatings - non-spraying products (PC15)

PC15	Non-metal-surface treatment products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	1.25 kg
Use frequency	1 uses per day
Inhalation,Exposure time	132 minutes
Application duration	120 minutes
Release duration	7200 Seconds

Other conditions affecting consumer exposure

Exposed skin surface assumed:	Hands and forearms
Contact rate	0.00003 kg/min
Inhalation,Assumes a room volume of maximum	20 m ³
Inhalation,Ventilation rate	0.6 m ³
Inhalation,Release area	100000 cm ²
Inhalation,Temperature	25 °C
Dermal,Protective gloves	0 %
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.3. Control of consumer exposure: Use in Paints/Coatings - spraying products (PC9a)

PC9a	Coatings and paints, thinners, paint removers
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Use frequency	1 uses per day
Inhalation,Spray duration	900 Seconds
Dermal,Release duration	900 Seconds

Other conditions affecting consumer exposure

Exposed skin surface assumed:	Hands and forearms
Contact rate	0.0001 kg/min

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation,Assumes a room volume of maximum	34 m ³
Inhalation,Ventilation rate	1.5 m ³
Inhalation,Mass generation rate	0.0198 kg/min
Inhalation,Airborne fraction	100 %
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.4. Control of consumer exposure: Use in Paints/Coatings - spraying products (PC15)

PC15	Non-metal-surface treatment products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Use frequency	1 uses per day
Inhalation,Spray duration	900 Seconds
Dermal,Release duration	900 Seconds

Other conditions affecting consumer exposure

Exposed skin surface assumed:	Hands and forearms
Contact rate	0.0001 kg/min
Inhalation,Assumes a room volume of maximum	34 m ³
Inhalation,Ventilation rate	1.5 m ³
Inhalation,Mass generation rate	0.0198 kg/min
Inhalation,Airborne fraction	100 %
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.5. Control of consumer exposure: Use in Printing inks- Part A. Refilling of toners (cartridges) (PC18)

PC18	Ink and Toners
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.05 kg
Dermal	0.00001 kg
Inhalation,Exposure time	0.75 minutes
Application duration	0.3 minutes
Covers use up to	1 uses per day

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Inhalation,Assumes a room volume of maximum	1 m ³
Inhalation,Ventilation rate	0.5 m ³
Inhalation,Release area	20 cm ²
Dermal,Uptake fraction	100 %
Inhalation,Temperature	25 °C

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.6. Control of consumer exposure: Use in Printing inks- Part B. Printing process (PC18)

PC18	Ink and Toners
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.016 kg
Dermal	0.00001 kg
Covers use up to	1 uses per day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Inhalation, Assumes a room volume of maximum	25 m ³
Inhalation, Ventilation rate	0.6 m ³
Dermal, Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.7. Control of consumer exposure: Use in leather furniture sprays (PC23)

PC23	Leather treatment products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	10 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers use up to	1 times per year
Inhalation, Spray duration	180 Seconds
Inhalation, Exposure duration	240 min/day
Dermal, Release duration	180 Seconds

Other conditions affecting consumer exposure

Exposed skin surface assumed:	430 cm ²
Contact rate	0.0001 % kg/min
Inhalation, Assumes a room volume of maximum	58 m ³
Inhalation, Ventilation rate	0.5 m ³
Dermal, Uptake fraction	100 %
Mass generation rate	0.0006 % kg/min

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.8. Control of consumer exposure: Leather tanning, dye, finishing, impregnation and care products – Shoe cream (PC23)

PC23	Leather treatment products
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	50 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.1 kg
Use frequency	26 times per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.9. Control of consumer exposure: Use in surface treatment products – non-spraying products (PC31)

PC31	Polishes and wax blends
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	10 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.55 kg
Dermal	0.0055 kg
Use frequency	1 uses per day
Inhalation,Exposure time	240 minutes
Application duration	900 minutes

Other conditions affecting consumer exposure

Exposed skin surface assumed:	430 cm ²
Inhalation,Assumes a room volume of maximum	58 m ³
Inhalation,Ventilation rate	0.5 m ³
Inhalation,Release area	220000 cm ²

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation, Temperature	25 °C
Dermal, Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.10. Control of consumer exposure: Leather tanning, dye, finishing, impregnation and care products – Shoe cream (PC34)

PC34	Textile dyes, and impregnating products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	50 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	
Use frequency	365 times per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Covers use in room size of	1 m ³
Ventilation rate	2

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.11. Control of consumer exposure: Textile dyes, finishing and impregnation products / Textile dyes - powder - Hand wash - Part B; (PC34)

PC34	Textile dyes, and impregnating products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	10 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Dermal	19000 mg
Use frequency	1 uses per day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting consumer exposure

Exposed skin surface assumed:	1900 cm ²
Uptake fraction, Dermal	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.12. Control of consumer exposure: Textile dyes, finishing and impregnation products / Textile dyes - powder - Residues on clothing (leaching) - Part C; (PC34)

PC34	Textile dyes, and impregnating products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	20 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Dermal	1 kg
Use frequency	365 times per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	14000 cm ²
Uptake fraction	100 %
Covers skin contact area up to	80 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.13. Control of consumer exposure: Textile dyes, finishing and impregnation products / Textile dyes - liquid - Machine wash - Part A; (PC34)

PC34	Textile dyes, and impregnating products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	60 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.5 kg
Dermal	0.00001 kg
Use frequency	365 times per year

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Exposure time	0.75 minutes
Application duration	0.3 minutes

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Covers use in room size of	1 m ³
Ventilation rate	2
Temperature	25 °C
Release area	20 % cm ²

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.14. Control of consumer exposure: Textile dyes, finishing and impregnation products / Textile dyes - liquid - Hand wash - Part B; (PC34)

PC34	Textile dyes, and impregnating products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	10 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Dermal	19000 mg
Use frequency	1 uses per day

Other conditions affecting consumer exposure

Exposed skin surface assumed:	1900 cm ²
Uptake fraction,Dermal	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.15. Control of consumer exposure: Textile dyes, finishing and impregnation products / Textile dyes - liquid - Residues on clothing (leaching) - Part C; (PC34)

PC34	Textile dyes, and impregnating products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	60 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Dermal	1 kg
Use frequency	365 times per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	14000 cm ²
Uptake fraction	100 %
Covers skin contact area up to	80 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.16. Control of consumer exposure: Textile dyes, finishing and impregnation products / Textile dyes - impregnation sprays - Spraying - Part A; (PC34)

PC34	Textile dyes, and impregnating products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	10 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers use up to	1 uses per day
Inhalation,Spray duration	24.6 Seconds
Inhalation,Exposure duration	60 min/day
Dermal,Release duration	24.6 Seconds

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Contact rate	0.000046 % kg/min
Inhalation,Assumes a room volume of maximum	10 m ³
Inhalation,Ventilation rate	2.5
Dermal,Uptake fraction	100 %
Mass generation rate	0.0996 % kg/min

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.2.17. Control of consumer exposure: Textile dyes, finishing and impregnation products / Textile dyes - impregnation sprays - Leaving on - Part B; (PC34)

PC34	Textile dyes, and impregnating products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	10 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.0162 kg
Dermal	0.00016 kg
Covers use up to	365 times per year
Inhalation,Application duration	10 minutes
Inhalation,Exposure duration	60 minutes

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Inhalation,Assumes a room volume of maximum	15 m ³
Inhalation,Ventilation rate	2.5
Dermal,Uptake fraction	100 %
Release area	17100 % cm ²
Temperature	25 °C

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

9.3. Exposure estimation and reference to its source

9.3.1. Consumer exposure Use in Paints/Coatings - non-spraying products (PC9a)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.769 mg/kg bw/day	0.05225	EASY TRA
Inhalation - Long-term - systemic effects	0.709386 mg/m ³	0.101341	EASY TRA
Sum RCR - Long-term - systemic effects		0.154	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

9.3.2. Consumer exposure Use in Paints/Coatings - non-spraying products (PC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.769 mg/kg bw/day	0.05225	EASY TRA
Inhalation - Long-term - systemic effects	0.709386 mg/m ³	0.101341	EASY TRA
Sum RCR - Long-term - systemic effects		0.154	

9.3.3. Consumer exposure Use in Paints/Coatings - spraying products (PC9a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.154 mg/kg bw/day	0.021771	EASY TRA
Inhalation - Long-term - systemic effects	0.261246 mg/m ³	0.037321	EASY TRA
Sum RCR - Long-term - systemic effects		0.059	

9.3.4. Consumer exposure Use in Paints/Coatings - spraying products (PC15)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.154 mg/kg bw/day	0.021771	EASY TRA
Inhalation - Long-term - systemic effects	0.261246 mg/m ³	0.037321	EASY TRA
Sum RCR - Long-term - systemic effects		0.059	

9.3.5. Consumer exposure Use in Printing inks- Part A. Refilling of toners (cartridges) (PC18)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.007692 mg/kg bw/day	0	EASY TRA
Inhalation - Long-term - systemic effects	0.00000042 mg/m ³	0.00000006	EASY TRA
Sum RCR - Long-term - systemic effects		0	

9.3.6. Consumer exposure Use in Printing inks- Part B. Printing process (PC18)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.217 mg/kg bw/day	0.3167	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	0.007692 mg/m ³	0.000145	EASY TRA
Sum RCR - Long-term - systemic effects		0.317	

9.3.7. Consumer exposure Use in leather furniture sprays (PC23)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.001264 mg/kg bw/day	0.000024	EASY TRA
Inhalation - Long-term - systemic effects	0.020086 mg/m ³	0.002869	EASY TRA
Sum RCR - Long-term - systemic effects		0.003	

9.3.8. Consumer exposure Leather tanning, dye, finishing, impregnation and care products – Shoe cream (PC23)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.054795 mg/kg bw/day	0.001034	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

9.3.9. Consumer exposure Use in surface treatment products – non-spraying products (PC31)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.385 mg/kg bw/day	0.026125	EASY TRA
Inhalation - Long-term - systemic effects	5.057 mg/m ³	0.72247	EASY TRA
Sum RCR - Long-term - systemic effects		0.749	

9.3.10. Consumer exposure Leather tanning, dye, finishing, impregnation and care products – Shoe cream (PC34)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0 mg/m ³	0	EASY TRA
Sum RCR - Long-term - systemic effects		0	

9.3.11. Consumer exposure Textile dyes, finishing and impregnation products / Textile dyes - powder - Hand wash - Part B; (PC34)

Information for contributing exposure scenario			
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	29.231 mg/kg bw/day	0.551524	EASY TRA
Sum RCR - Long-term - systemic effects		0.552	

9.3.12. Consumer exposure Textile dyes, finishing and impregnation products / Textile dyes - powder - Residues on clothing (leaching) - Part C; (PC34)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	7.385 mg/kg bw/day	0.139332	EASY TRA
Sum RCR - Long-term - systemic effects		0.139	

9.3.13. Consumer exposure Textile dyes, finishing and impregnation products / Textile dyes - liquid - Machine wash - Part A; (PC34)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.092308 mg/kg bw/day	0.001742	EASY TRA
Inhalation - Long-term - systemic effects	0.088805 mg/m ³	0.012686	EASY TRA
Sum RCR - Long-term - systemic effects		0.014	

9.3.14. Consumer exposure Textile dyes, finishing and impregnation products / Textile dyes - liquid - Hand wash - Part B; (PC34)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	29.231 mg/kg bw/day	0.551524	EASY TRA
Sum RCR - Long-term - systemic effects		0.552	

9.3.15. Consumer exposure Textile dyes, finishing and impregnation products / Textile dyes - liquid - Residues on clothing (leaching) - Part C; (PC34)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	16.985 mg/kg bw/day	0.320464	EASY TRA
Sum RCR - Long-term - systemic effects		0.32	

9.3.16. Consumer exposure Textile dyes, finishing and impregnation products / Textile dyes - impregnation sprays - Spraying - Part A; (PC34)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.029015	0.000547	EASY TRA
Inhalation - Long-term - systemic effects	0.000068	0.00000972	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

9.3.17. Consumer exposure Textile dyes, finishing and impregnation products / Textile dyes - impregnation sprays - Leaving on - Part B; (PC34)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.246154 mg/kg bw/day	0.004644	EASY TRA
Inhalation - Long-term - systemic effects	1.623 mg/m ³	0.231787	EASY TRA
Sum RCR - Long-term - systemic effects		0.236	

9.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

9.4.1. Environment

No data available

9.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

10. ES-10: Use in Cleaning Agents

10.1. Title section

Use in Cleaning Agents

ES Ref.: ES-10
ES Type: Worker

Company ES code: ES-10
Association ref code: IW-10

Worker

CS-2	Use in closed process, no likelihood of exposure	PROC1
CS-3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-4	Use in closed batch process (synthesis or formulation)	PROC3
CS-5	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-6	Industrial spraying	PROC7
CS-7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-8	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-9	Roller application or brushing	PROC10
CS-10	Treatment of articles by dipping and pouring	PROC13

Processes, tasks, activities covered	Industrial useX
Assessment method	EasyTRA 4.1.0

10.2. Conditions of use affecting exposure

10.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.2.5. Control of worker exposure: Industrial spraying (PROC7)

PROC7	Industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	960 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.2.7. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.2.8. Control of worker exposure: Roller application or brushing (PROC10)

PROC10	Roller application or brushing
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.2.9. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13 Treatment of articles by dipping and pouring

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to > 5 days/week
Exposure duration > 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation None

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

Respiratory protection None
Protective gloves. Assigned Protection Factor (APF) of 10 90 %
Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed: 480 cm²
Indoor use

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

10.3. Exposure estimation and reference to its source

10.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

10.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

10.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

10.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

10.3.5. Worker exposure Industrial spraying (PROC7)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	5415.6 mg/kg bw/day	0.348837	EASY TRA
Inhalation - Long-term - systemic effects	13 mg/m ³	0.371429	EASY TRA
Sum RCR - Long-term - systemic effects		0.72	

10.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

10.3.7. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

10.3.8. Worker exposure Roller application or brushing (PROC10)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.765	

10.3.9. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

10.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

10.4.1. Environment

No data available

10.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

11. ES-11: Use in Cleaning Agents

11.1. Title section

Use in Cleaning Agents

ES Ref.: ES-11
ES Type: Worker

Company ES code: ES-11
Association ref code: PW-11

Worker

CS-2	Use in closed process, no likelihood of exposure	PROC1
CS-3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-4	Use in closed batch process (synthesis or formulation)	PROC3
CS-5	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-8	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-9	Roller application or brushing	PROC10
CS-10	Non-industrial spraying	PROC11
CS-11	Treatment of articles by dipping and pouring	PROC13

Processes, tasks, activities covered	Professional useX
Assessment method	EasyTRA 4.1.0

11.2. Conditions of use affecting exposure

11.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	Effectiveness. 30%
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	80%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Ventilation, Good	Effectiveness. 30%
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.2.7. Control of worker exposure: Roller application or brushing (PROC10)

PROC10	Roller application or brushing
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	80%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.2.8. Control of worker exposure: Non-industrial spraying (PROC11)

PROC11	Non-industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.2.9. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13 Treatment of articles by dipping and pouring

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Dustiness	fugacity, Low
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to > 5 days/week
Exposure duration > 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation None

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

Respiratory protection None
Protective gloves. Assigned Protection Factor (APF) of 10 90 %
Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed: Palm of both hands
Ventilation, Good Effectiveness. 30%
Indoor use

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

11.3. Exposure estimation and reference to its source

11.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	1060.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		1060.001	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

11.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

11.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

11.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

11.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

11.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.868	

11.3.7. Worker exposure Roller application or brushing (PROC10)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.395	

11.3.8. Worker exposure Non-industrial spraying (PROC11)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	53.75 mg/kg bw/day	0.507075	EASY TRA
Inhalation - Long-term - systemic effects	6.9 mg/m ³	0.197143	EASY TRA
Sum RCR - Long-term - systemic effects		0.704	

11.3.9. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

11.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

11.4.1. Environment

No data available

11.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

12. ES-12: Use in Cleaning Agents

12.1. Title section

Use in Cleaning Agents

ES Ref.: ES-12
ES Type: Consumer

Company ES code: ES-12
Association ref code: C-12

Consumer

CS-1	Use in All-purpose cleaners - non-spraying products-Part A. Mixing and Loading	PC35
CS-2	Use in All-purpose cleaners - non-spraying products-Part B. Application	PC35
CS-3	Use in All-purpose cleaners - spraying products-Part A. Spraying	PC35
CS-4	Use in All-purpose cleaners - spraying products-Part B. Cleaning	PC35
CS-5	Use in All-purpose cleaners - Use in Floor cleaning products-Part A. Mixing and Loading	PC35
CS-6	Use in All-purpose cleaners - Use in Floor cleaning products-Part B Application	PC35

Processes, tasks, activities covered	Consumer useX
Assessment method	ConsExpo

12.2. Conditions of use affecting exposure

12.2.1. Control of consumer exposure: Use in All-purpose cleaners - non-spraying products-Part A. Mixing and Loading (PC35)

PC35	Washing and cleaning products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	20 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.5 kg
Dermal	0.00001 kg
Use frequency Inhalation,Exposure time	1 uses per day 0.75 minutes
Application duration	0.3 minutes

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation,Assumes a room volume of maximum	1 m ³
Inhalation,Ventilation rate	0.5 m ³
Inhalation,Release area	20 cm ²
Inhalation,Temperature	25 °C
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

12.2.2. Control of consumer exposure: Use in All-purpose cleaners - non-spraying products-Part B. Application (PC35)

PC35	Washing and cleaning products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	4 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.4 kg
Dermal	0.019 kg
Use frequency	1 uses per day
Inhalation,Exposure time	240 minutes
Application duration	20 minutes

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Inhalation,Assumes a room volume of maximum	58 m ³
Inhalation,Ventilation rate	0.5 m ³
Inhalation,Release area	100000 cm ²
Inhalation,Temperature	25 °C
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

12.2.3. Control of consumer exposure: Use in All-purpose cleaners - spraying products-Part A. Spraying (PC35)

PC35	Washing and cleaning products
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation,Spray duration	24.6 Seconds
Dermal,Release duration	24.6 Seconds
Use frequency	365 days per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	1900 cm ²
Contact rate	0.000046 kg/min
Inhalation,Assumes a room volume of maximum	15 m ³
Inhalation,Ventilation rate	2.5 m ³
Inhalation,Mass generation rate	0.0468 kg/min
Inhalation,Airborne fraction	20 %
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

12.2.4. Control of consumer exposure: Use in All-purpose cleaners - spraying products-Part B. Cleaning (PC35)

PC35	Washing and cleaning products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.0162 kg
Dermal	0.00016 kg
Inhalation,Spray duration	60 minutes
Dermal,Release duration	10 minutes

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Use frequency	365 days per year
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Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Inhalation,Assumes a room volume of maximum	10 m ³
Inhalation,Ventilation rate	2.5 m ³
Dermal,Uptake fraction	100 %
Inhalation,Release area	250000 cm ²
Inhalation,Temperature	25 °C

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

12.2.5. Control of consumer exposure: Use in All-purpose cleaners - Use in Floor cleaning products-Part A. Mixing and Loading (PC35)

PC35	Washing and cleaning products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	4 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.5 kg
Dermal	0.00001 kg
Use frequency	1 uses per day
Inhalation,Exposure time	0.75 minutes
Application duration	0.3 minutes

Other conditions affecting consumer exposure

Inhalation,Assumes a room volume of maximum	1 m ³
Inhalation,Ventilation rate	1 m ³
Inhalation,Release area	20 cm ²
Inhalation,Temperature	25 °C
Dermal,Uptake fraction	100 %

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

12.2.6. Control of consumer exposure: Use in All-purpose cleaners - Use in Floor cleaning products-Part B Application (PC35)

PC35	Washing and cleaning products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	4 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.88 kg
Dermal	0.019 kg
Use frequency	1 uses per day
Inhalation,Exposure time	240 minutes
Application duration	30 minutes

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Inhalation,Assumes a room volume of maximum	58 m ³
Inhalation,Ventilation rate	0.5 m ³
Inhalation,Release area	220000 cm ²
Inhalation,Temperature	25 °C
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

12.3. Exposure estimation and reference to its source

12.3.1. Consumer exposure Use in All-purpose cleaners - non-spraying products-Part A. Mixing and Loading (PC35)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.030769 mg/kg bw/day	0.000581	EASY TRA
Inhalation - Long-term - systemic effects	-0.010613 mg/m ³	0.001516	EASY TRA
Sum RCR - Long-term - systemic effects		0.002	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

12.3.2. Consumer exposure Use in All-purpose cleaners - non-spraying products-Part B. Application (PC35)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	11.692 mg/kg bw/day	0.22061	EASY TRA
Inhalation - Long-term - systemic effects	0.612559 mg/m ³	0.087508	EASY TRA
Sum RCR - Long-term - systemic effects		0.308	

12.3.3. Consumer exposure Use in All-purpose cleaners - spraying products-Part A. Spraying (PC35)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.001533 mg/kg bw/day	0.000029	EASY TRA
Inhalation - Long-term - systemic effects	0.000011 mg/m ³	0.00000158	EASY TRA
Sum RCR - Long-term - systemic effects		0	

12.3.4. Consumer exposure Use in All-purpose cleaners - spraying products-Part B. Cleaning (PC35)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.123077 mg/kg bw/day	0.002322	EASY TRA
Inhalation - Long-term - systemic effects	1.239 mg/m ³	0.177018	EASY TRA
Sum RCR - Long-term - systemic effects		0.179	

12.3.5. Consumer exposure Use in All-purpose cleaners - Use in Floor cleaning products-Part A. Mixing and Loading (PC35)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.003846 mg/kg bw/day	0.000073	EASY TRA
Inhalation - Long-term - systemic effects	0.001172 mg/m ³	0.000167	EASY TRA
Sum RCR - Long-term - systemic effects		0	

12.3.6. Consumer exposure Use in All-purpose cleaners - Use in Floor cleaning products-Part B Application (PC35)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	7.308 mg/kg bw/day	0.137881	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	0.379012 mg/m ³	0.054145	EASY TRA
Sum RCR - Long-term - systemic effects		0.192	

12.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

12.4.1. Environment

No data available

12.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

13. ES-13: Use in lubricants

13.1. Title section

Use in lubricants

ES Ref.: ES-13
ES Type: Worker

Company ES code: ES-13

Worker

CS-2	Use in closed process, no likelihood of exposure	PROC1
CS-3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-4	Use in closed batch process (synthesis or formulation)	PROC3
CS-5	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-6	Industrial spraying	PROC7
CS-7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-8	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-10	Roller application or brushing	PROC10
CS-11	Treatment of articles by dipping and pouring	PROC13
CS-12	Lubrication at high energy conditions in metal working operations	PROC17
CS-13	General greasing /lubrication at high kinetic energy conditions	PROC18

Processes, tasks, activities covered	Industrial useX
Assessment method	EasyTRA 4.1.0

13.2. Conditions of use affecting exposure

13.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.5. Control of worker exposure: Industrial spraying (PROC7)

PROC7	Industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
Indoor use	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness. 90%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.7. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
--------	---

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.8. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
------------------------	------

Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.9. Control of worker exposure: Roller application or brushing (PROC10)

PROC10	Roller application or brushing
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.10. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
--------	--

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.11. Control of worker exposure: Lubrication at high energy conditions in metal working operations (PROC17)

PROC17	Lubrication at high energy conditions in metal working operations
--------	---

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
---------------------------	--------------------

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	960 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.2.12. Control of worker exposure: General greasing /lubrication at high kinetic energy conditions (PROC18)

PROC18	General greasing /lubrication at high kinetic energy conditions
--------	---

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
---------------------------	--------------------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	960 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

13.3. Exposure estimation and reference to its source

13.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

13.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

13.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

13.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

13.3.5. Worker exposure Industrial spraying (PROC7)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	54.6 mg/kg bw/day	0.515094	EASY TRA
Inhalation - Long-term - systemic effects	13 mg/m ³	0.371429	EASY TRA
Sum RCR - Long-term - systemic effects		0.887	

13.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

13.3.7. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

13.3.8. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

13.3.9. Worker exposure Roller application or brushing (PROC10)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.765	

13.3.10. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

13.3.11. Worker exposure Lubrication at high energy conditions in metal working operations (PROC17)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	5.172 mg/m ³	0.14778	EASY TRA
Sum RCR - Long-term - systemic effects		0.174	

13.3.12. Worker exposure General greasing /lubrication at high kinetic energy conditions (PROC18)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	5.172 mg/m ³	0.14778	EASY TRA
Sum RCR - Long-term - systemic effects		0.277	

13.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

13.4.1. Environment

No data available

13.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

14. ES-14: Use in metal working fluids

14.1. Title section

Use in metal working fluids

ES Ref.: ES-14
ES Type: Worker

Company ES code: ES-15
Association ref code: IW-15

Worker		
CS-2	Use in closed process, no likelihood of exposure	PROC1
CS-3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-4	Use in closed batch process (synthesis or formulation)	PROC3
CS-5	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-6	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC5
CS-7	Industrial spraying	PROC7
CS-8	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-9	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-10	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-11	Roller application or brushing	PROC10
CS-12	Treatment of articles by dipping and pouring	PROC13
CS-13	Lubrication at high energy conditions in metal working operations	PROC17

Processes, tasks, activities covered	Industrial useX
Assessment method	EasyTRA 4.1.0

14.2. Conditions of use affecting exposure

14.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.4. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.5. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	480 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.6. Control of worker exposure: Industrial spraying (PROC7)

PROC7	Industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.7. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness: 90%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.8. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.9. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.10. Control of worker exposure: Roller application or brushing (PROC10)

PROC10	Roller application or brushing
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.11. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

14.2.12. Control of worker exposure: Lubrication at high energy conditions in metal working operations (PROC17)

PROC17	Lubrication at high energy conditions in metal working operations
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics	
Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures	
Local exhaust ventilation	90%. Effectiveness

Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure	
Exposed skin surface assumed:	960 cm ²
Indoor use	

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
See chapter 8 of the safety data sheet (Environmental exposure controls).	

14.3. Exposure estimation and reference to its source

14.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

14.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Sum RCR - Long-term - systemic effects		0.087	
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14.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

14.3.4. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

14.3.5. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

14.3.6. Worker exposure Industrial spraying (PROC7)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	54.6 mg/kg bw/day	0.515094	EASY TRA
Inhalation - Long-term - systemic effects	13 mg/m ³	0.371429	EASY TRA
Sum RCR - Long-term - systemic effects		0.887	

14.3.7. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

14.3.8. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

14.3.9. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

14.3.10. Worker exposure Roller application or brushing (PROC10)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.765	

14.3.11. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

14.3.12. Worker exposure Lubrication at high energy conditions in metal working operations (PROC17)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	5.172 mg/m ³	0.14778	EASY TRA
Sum RCR - Long-term - systemic effects		0.174	

14.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

14.4.1. Environment

No data available

14.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

15. ES-15: Use in metal working fluids

15.1. Title section

Use in metal working fluids

ES Ref.: ES-15
ES Type: Worker

Company ES code: ES-16
Association ref code: IW-16

Worker		
CS-2	Use in closed process, no likelihood of exposure	PROC1
CS-3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-4	Use in closed batch process (synthesis or formulation)	PROC3
CS-5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC5
CS-6	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-8	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-9	Roller application or brushing	PROC10
CS-10	Non-industrial spraying	PROC11
CS-11	Treatment of articles by dipping and pouring	PROC13
CS-12	Lubrication at high energy conditions in metal working operations	PROC17

Processes, tasks, activities covered	Professional useX
Assessment method	EasyTRA 4.1.0

15.2. Conditions of use affecting exposure

15.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics	
Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.4. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	480 cm ²
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness. 80%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.7. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.8. Control of worker exposure: Roller application or brushing (PROC10)

PROC10	Roller application or brushing
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	80%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.9. Control of worker exposure: Non-industrial spraying (PROC11)

PROC11	Non-industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	90 Effectiveness
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.10. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

15.2.11. Control of worker exposure: Lubrication at high energy conditions in metal working operations (PROC17)

PROC17	Lubrication at high energy conditions in metal working operations
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	80%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	960 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

15.3. Exposure estimation and reference to its source

15.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

15.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

15.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

15.3.4. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.868	

15.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

15.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.868	

15.3.7. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

15.3.8. Worker exposure Roller application or brushing (PROC10)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.395	

15.3.9. Worker exposure Non-industrial spraying (PROC11)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	53.75 mg/kg bw/day	0.507075	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	6.9 mg/m ³	0.197143	EASY TRA
Sum RCR - Long-term - systemic effects		0.704	

15.3.10. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.1371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

15.3.11. Worker exposure Lubrication at high energy conditions in metal working operations (PROC17)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.765	

15.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

15.4.1. Environment

No data available

15.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

16. ES-16: Use in Agrochemicals

16.1. Title section

Use in Agrochemicals

ES Ref.: ES-16
ES Type: Worker

Company ES code: ES-16

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS-4	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-5	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-6	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-7	Non-industrial spraying	PROC11
CS-8	Treatment of articles by dipping and pouring	PROC13

Processes, tasks, activities covered	Industrial useX
Assessment method	EasyTRA 4.1.0

16.2. Conditions of use affecting exposure

16.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
-------	--

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to Exposure duration	> 5 days/week > 4 h/day
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
------------------------	------

Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
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Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

16.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
--------------------------	--------

Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
-----------------	-----------

Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
------------------------	------

Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

16.2.3. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

16.2.4. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
--------	---

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	80%. Effectiveness
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

16.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
--------	---

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

16.2.6. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

16.2.7. Control of worker exposure: Non-industrial spraying (PROC11)

PROC11	Non-industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	90 % Effectiveness
Protective gloves	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

16.2.8. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	480 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

16.3. Exposure estimation and reference to its source

16.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Sum RCR - Long-term - systemic effects		0.001	
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16.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

16.3.3. Worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

16.3.4. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

16.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.868	

16.3.6. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

16.3.7. Worker exposure Non-industrial spraying (PROC11)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	53.75 mg/kg bw/day	0.507075	EASY TRA
Inhalation - Long-term - systemic effects	6.9 mg/m ³	0.197143	EASY TRA
Sum RCR - Long-term - systemic effects		0.704	

16.3.8. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

16.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

16.4.1. Environment

No data available

16.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

17. ES-17: Use in/as Functional fluids

17.1. Title section

Use in/as Functional fluids

ES Ref.: ES-17
ES Type: Worker

Company ES code: ES-18

Worker

CS-2	Use in closed process, no likelihood of exposure	PROC1
CS-3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-4	Use in closed batch process (synthesis or formulation)	PROC3
CS-5	Chemical production where opportunity for exposure arises	PROC4
CS-6	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-8	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9

Processes, tasks, activities covered

Professional useX

Assessment method

EasyTRA 4.1.0

17.2. Conditions of use affecting exposure

17.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to
Exposure duration

> 5 days/week
> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
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Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

17.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
---------------------------------------	-------

Vapour pressure	0.008 hPa
-----------------	-----------

Viscosity, dynamic	30 mPa·s
--------------------	----------

Viscosity, kinematic	33 mm ² /s
----------------------	-----------------------

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

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
------------------------	------

Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

17.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

17.2.4. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves. Assigned Protection Factor (APF) of 10	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	480 cm ²
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Ventilation, Good	30 % Effectiveness
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

17.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
--------------------------	--------

Concentration of substance in product	100 %
---------------------------------------	-------

Vapour pressure	0.008 hPa
-----------------	-----------

Viscosity, dynamic	30 mPa·s
--------------------	----------

Viscosity, kinematic	33 mm ² /s
----------------------	-----------------------

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

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness. 90%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

17.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

17.2.7. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

17.3. Exposure estimation and reference to its source

17.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

17.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

17.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Sum RCR - Long-term - systemic effects		0.228	
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17.3.4. Worker exposure Chemical production where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

17.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

17.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

17.3.7. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

17.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

17.4.1. Environment

No data available

17.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

18. ES-18: Use in/as Functional fluids

18.1. Title section

Use in/as Functional fluids

ES Ref.: ES-18
ES Type: Worker

Company ES code: ES-18

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Chemical production where opportunity for exposure arises	PROC4
CS-5	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-6	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-7	Roller application or brushing	PROC20

Processes, tasks, activities covered	Professional useX
Assessment method	EasyTRA 4.1.0

18.2. Conditions of use affecting exposure

18.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

18.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

18.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics	
Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures	
Local exhaust ventilation	None

Conditions and measures related to personal protection, hygiene and health evaluation	
Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure	
Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
See chapter 8 of the safety data sheet (Environmental exposure controls).	

18.2.4. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics	
Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures	
Local exhaust ventilation	None

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	480 cm ²
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

18.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness. 80%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

18.2.6. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

18.2.7. Control of worker exposure: Roller application or brushing (PROC20)

PROC20	Use of functional fluids in small devices
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Protective gloves. Assigned Protection Factor (APF) of 10	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

18.3. Exposure estimation and reference to its source

18.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.044217 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

18.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

18.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

18.3.4. Worker exposure Chemical production where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

18.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

18.3.6. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

18.3.7. Worker exposure Roller application or brushing (PROC20)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.714 mg/kg bw/day	0.016173	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.386	

18.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

18.4.1. Environment

No data available

18.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

19. ES-19: Use in heat transfer and hydraulic fluids

19.1. Title section

Use in heat transfer and hydraulic fluids

ES Ref.: ES-19
ES Type: Consumer

Company ES code: ES-19
Association ref code: C-19

Consumer

CS-1	Heat Transfer Fluids	PC16
CS-2	Heat Transfer Fluids	PC16

Processes, tasks, activities covered	Consumer useX
Assessment method	ConsExpo

19.2. Conditions of use affecting exposure

19.2.1. Control of consumer exposure: Heat Transfer Fluids (PC16)

PC16	Heat Transfer Fluids
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	30 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Amount per use	1 kg
Use frequency	0.547945 times per year
Exposure time	0.25 h

Other conditions affecting consumer exposure

Exposed skin surface assumed:	Both hands
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

19.2.2. Control of consumer exposure: Heat Transfer Fluids (PC16)

PC16	Heat Transfer Fluids
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	30 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Amount per use	1 kg
Use frequency	0.547945 times per year
Exposure time	0.25 h

Other conditions affecting consumer exposure

Exposed skin surface assumed:	Both hands
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

19.3. Exposure estimation and reference to its source

19.3.1. Consumer exposure Heat Transfer Fluids (PC16)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	4.11 mg/kg bw/day	0.077547	EASY TRA
Inhalation - Long-term - systemic effects	1.93 mg/m ³	0.275714	EASY TRA
Sum RCR - Long-term - systemic effects		0.353	

19.3.2. Consumer exposure Heat Transfer Fluids (PC16)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	4.11 mg/kg bw/day	0.077547	EASY TRA
Inhalation - Long-term - systemic effects	1.93 mg/m ³	0.275714	EASY TRA
Sum RCR - Long-term - systemic effects		0.353	

19.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

19.4.1. Environment

No data available

19.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

20. ES-20: Use in/as de-icing/anti-icing applications/agents

20.1. Title section

Use in/as de-icing/anti-icing applications/agents

ES Ref.: ES-20
ES Type: Worker

Company ES code: ES-20
Association ref code: PW-20

Worker		
CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-4	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-5	Non-industrial spraying	PROC11

Processes, tasks, activities covered	Professional useX
Assessment method	EasyTRA 4.1.0

20.2. Conditions of use affecting exposure

20.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

20.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

20.2.3. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness: 80%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

20.2.4. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

20.2.5. Control of worker exposure: Non-industrial spraying (PROC11)

PROC11	Non-industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	90%. Effectiveness
Protective gloves	90%. Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

20.3. Exposure estimation and reference to its source

20.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

20.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

20.3.3. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

20.3.4. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.868	

20.3.5. Worker exposure Non-industrial spraying (PROC11)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	53.75 mg/kg bw/day	0.507075	EASY TRA
Inhalation - Long-term - systemic effects	6.9 mg/m ³	0.197143	EASY TRA
Sum RCR - Long-term - systemic effects		0.704	

20.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

20.4.1. Environment

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

20.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

21. ES-21: Use in/as de-icing/anti-icing applications/agents

21.1. Title section

Use in/as de-icing/anti-icing applications/agents

ES Ref.: ES-21
ES Type: Consumer

Company ES code: ES-21
Association ref code: C-21

Consumer

CS-1	Use in De-icing applications - spraying products-Part A. Spraying	PC4
CS-2	Use in De-icing applications - spraying products-Part B. Cleaning	PC4
CS-3	Use in De-icing applications - Use in Anti-freezing agents	PC4

Processes, tasks, activities covered	Consumer useX
Assessment method	ConsExpo

21.2. Conditions of use affecting exposure

21.2.1. Control of consumer exposure: Use in De-icing applications - spraying products-Part A. Spraying (PC4)

PC4	Anti-Freeze and De-icing products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation,Spray duration	42 Seconds
Dermal,Release duration	42 Seconds
Use frequency	365 days per year
Inhalation,Exposure duration	240 minutes

Other conditions affecting consumer exposure

Exposed skin surface assumed:	1900 cm ²
Contact rate	0.000046 kg/min
Inhalation,Assumes a room volume of maximum	58 m ³
Inhalation,Ventilation rate	0.5 m ³

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation,Mass generation rate	0.0685 kg/min
Inhalation,Airborne fraction	100 %
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

21.2.2. Control of consumer exposure: Use in De-icing applications - spraying products-Part B. Cleaning (PC4)

PC4	Anti-Freeze and De-icing products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Dermal	0.00029 kg
Use frequency	365 days per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

21.2.3. Control of consumer exposure: Use in De-icing applications - Use in Anti-freezing agents (PC4)

PC4	Anti-Freeze and De-icing products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	30 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Amount per use	1 kg
Use frequency	0.547945 events per day
Exposure time	0.25 h

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting consumer exposure

Exposed skin surface assumed: Both hands

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

21.3. Exposure estimation and reference to its source

21.3.1. Consumer exposure Use in De-icing applications - spraying products-Part A. Spraying (PC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.495385 mg/kg bw/day	0.009347	EASY TRA
Inhalation - Long-term - systemic effects	0.000665 mg/m ³	0.000095	EASY TRA
Sum RCR - Long-term - systemic effects		0.009	

21.3.2. Consumer exposure Use in De-icing applications - spraying products-Part B. Cleaning (PC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	4.462 mg/kg bw/day	0.08418	EASY TRA
Sum RCR - Long-term - systemic effects		0.084	

21.3.3. Consumer exposure Use in De-icing applications - Use in Anti-freezing agents (PC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	4.11 mg/kg bw/day	0.077547	EASY TRA
Inhalation - Long-term - systemic effects	1.93 mg/m ³	0.275714	EASY TRA
Sum RCR - Long-term - systemic effects		0.353	

21.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

21.4.1. Environment

No data available

21.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

22. ES-22: Use in laboratories

22.1. Title section

Use in laboratories

ES Ref.: ES-22
ES Type: Worker

Company ES code: ES-22
Association ref code: IW-22

Worker

CS-1	Use in laboratories	PROC15
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Processes, tasks, activities covered	Industrial useX
Assessment method	EasyTRA 4.1.0

22.2. Conditions of use affecting exposure

22.2.1. Control of worker exposure: Use in laboratories (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

22.3. Exposure estimation and reference to its source

22.3.1. Worker exposure Use in laboratories (PROC15)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

22.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

22.4.1. Environment

No data available

22.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

23. ES-22: Use in laboratories

23.1. Title section

Use in laboratories

ES Ref.: ES-22
ES Type: Worker

Company ES code: ES-22
Association ref code: PW-22

Worker

CS-1	Use in laboratories	PROC15
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Processes, tasks, activities covered	Professional useX
Assessment method	EasyTRA 4.1.0

23.2. Conditions of use affecting exposure

23.2.1. Control of worker exposure: Use in laboratories (PROC15)

PROC15	Use as laboratory reagent
--------	---------------------------

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

23.3. Exposure estimation and reference to its source

23.3.1. Worker exposure Use in laboratories (PROC15)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

23.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

23.4.1. Environment

No data available

23.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

24. ES-23: Use in water treatment agents

24.1. Title section

Use in water treatment agents

ES Ref.: ES-23
ES Type: Worker

Company ES code: ES-26
Association ref code: IW-26

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Chemical production where opportunity for exposure arises	PROC4
CS-5	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-6	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-7	Treatment of articles by dipping and pouring	PROC13

Processes, tasks, activities covered	Industrial useX
Assessment method	EasyTRA 4.1.0

24.2. Conditions of use affecting exposure

24.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
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Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

24.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

24.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

24.2.4. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

24.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness. 90%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

24.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

24.2.7. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

24.3. Exposure estimation and reference to its source

24.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

24.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

24.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Sum RCR - Long-term - systemic effects		0.228	
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24.3.4. Worker exposure Chemical production where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

24.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

24.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

24.3.7. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

24.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

24.4.1. Environment

No data available

24.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

25. ES-24: Consumer use in adhesives and sealants

25.1. Title section

Consumer use in adhesives and sealants

ES Ref.: ES-24
ES Type: Consumer

Company ES code: ES-23
Association ref code: C-23

Consumer

CS-1	Mixing and Loading	PC1
CS-2	Mixing and Loading	PC1
CS-3	Mixing and Loading	PC1

Processes, tasks, activities covered	Consumer useX
Assessment method	ConsExpo

25.2. Conditions of use affecting exposure

25.2.1. Control of consumer exposure: Mixing and Loading (PC1)

PC1	Adhesives, sealants
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	0.075 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	9 kg
Use frequency Inhalation,Exposure time	1 events per day 75 minutes
Dermal,Release duration	4500 Seconds

Other conditions affecting consumer exposure

Exposed skin surface assumed:	110 cm ²
Contact rate	0.03 kg/min
Inhalation,Assumes a room volume of maximum	58 m ³
Inhalation,Ventilation rate	0.5 m ³
Dermal,Uptake fraction	100 %
Inhalation,Release area	40000 cm ²

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation, Temperature	25 °C
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

25.2.2. Control of consumer exposure: Mixing and Loading (PC1)

PC1	Adhesives, sealants
-----	---------------------

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	50 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.5 kg
Inhalation, Exposure time	2 minutes
Dermal, Release duration	120 Seconds
Covers frequency up to:	365 times per year
Inhalation, Application duration	2 minutes

Other conditions affecting consumer exposure

Exposed skin surface assumed:	110 cm ²
Contact rate	0.03 kg/min
Inhalation, Assumes a room volume of maximum	25 m ³
Inhalation, Ventilation rate	0.5 m ³
Dermal, Uptake fraction	100 %
Inhalation, Release area	40000 cm ²
Inhalation, Temperature	25 °C
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

25.2.3. Control of consumer exposure: Mixing and Loading (PC1)

PC1	Adhesives, sealants
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Product (article) characteristics

Physical form of product	Liquid
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Concentration of substance in product	50 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.5 kg
Inhalation,Exposure time	2 minutes
Dermal,Release duration	120 Seconds
Inhalation,Application duration	2 minutes
Covers frequency up to:	365 times per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	110 cm ²
Contact rate	0.03 kg/min
Inhalation,Assumes a room volume of maximum	1000 m ³
Inhalation,Ventilation rate	1 m ³
Dermal,Uptake fraction	100 %
Inhalation,Release area	40000 cm ²
Inhalation,Temperature	21 °C
Covers outdoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

25.3. Exposure estimation and reference to its source

25.3.1. Consumer exposure Mixing and Loading (PC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.025962 mg/kg bw/day	0.00049	EASY TRA
Inhalation - Long-term - systemic effects	2.295 mg/m ³	0.327887	EASY TRA
Sum RCR - Long-term - systemic effects		0.328	
Acute - Local - Inhalation	0.000018 mg/kg bw/day	0.00000084	EASY TRA
Long term - Local - Inhalation	0.11585 mg/m ³	0.009654	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

25.3.2. Consumer exposure Mixing and Loading (PC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.461538 mg/kg bw/day	0.008708	EASY TRA
Inhalation - Long-term - systemic effects	0.417202 mg/m ³	0.0596	EASY TRA
Sum RCR - Long-term - systemic effects		0.068	
Acute - Local - Inhalation	0.000018 mg/kg bw/day	0.00000084	EASY TRA
Long term - Local - Inhalation	0.11585 mg/m ³	0.009654	EASY TRA

25.3.3. Consumer exposure Mixing and Loading (PC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.461538 mg/kg bw/day	0.008708	EASY TRA
Inhalation - Long-term - systemic effects	0.332668 mg/m ³	0.047524	EASY TRA
Sum RCR - Long-term - systemic effects		0.056	
Acute - Local - Inhalation	0.000018 mg/kg bw/day	0.00000084	EASY TRA
Long term - Local - Inhalation	0.11585 mg/m ³	0.009654	EASY TRA

25.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

25.4.1. Environment

No data available

25.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

26. ES-25: Production of Polymers, filled polymers, foams, coatings, adhesives, sealants

26.1. Title section

Production of Polymers, filled polymers, foams, coatings, adhesives, sealants

ES Ref.: ES-25
ES Type: Worker

Company ES code: ES-24
Association ref code: IW-24

Worker		
CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Chemical production where opportunity for exposure arises	PROC4
CS-5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	PROC5
CS-6	Industrial spraying	PROC7
CS-7	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-8	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)	PROC9
CS-10	Roller application or brushing	PROC10
CS-11	Treatment of articles by dipping and pouring	PROC13
CS-12	Tabletting, compression, extrusion, pelettisation, granulation	PROC14
CS-13	Use as laboratory reagent	PROC15

Processes, tasks, activities covered	Industrial useX
Assessment method	EasyTRA 4.1.0

26.2. Conditions of use affecting exposure

26.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.4. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
---------------------------	------

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

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.5. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	480 cm ²
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.6. Control of worker exposure: Industrial spraying (PROC7)

PROC7	Industrial spraying
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	1500 cm ²
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

26.2.7. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness. 90%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.8. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.9. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

PROC9	Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.10. Control of worker exposure: Roller application or brushing (PROC10)

PROC10	Roller application or brushing
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	90%. Effectiveness
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.11. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.12. Control of worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)

PROC14	Tableting, compression, extrusion, pelettisation, granulation
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	480 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.2.13. Control of worker exposure: Use as laboratory reagent (PROC15)

PROC15	Use as laboratory reagent
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	240 cm ²
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

26.3. Exposure estimation and reference to its source

26.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

26.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.087	

26.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

26.3.4. Worker exposure Chemical production where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

26.3.5. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) (PROC5)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

26.3.6. Worker exposure Industrial spraying (PROC7)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	54.6 mg/kg bw/day	0.515094	EASY TRA
Inhalation - Long-term - systemic effects	13 mg/m ³	0.371429	EASY TRA
Sum RCR - Long-term - systemic effects		0.887	

26.3.7. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Inhalation - Long-term - systemic effects	2.586 mg/m ³	0.07389	EASY TRA
Sum RCR - Long-term - systemic effects		0.203	

26.3.8. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

26.3.9. Worker exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.434	

26.3.10. Worker exposure Roller application or brushing (PROC10)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	2.743 mg/kg bw/day	0.025876	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.765	

26.3.11. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario			
Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

26.3.12. Worker exposure **Tabletting, compression, extrusion, pelettisation, granulation (PROC14)**

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	3.429 mg/kg bw/day	0.032345	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/kg bw/day	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.402	

26.3.13. Worker exposure **Use as laboratory reagent (PROC15)**

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.342857 mg/kg bw/day	0.003235	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.373	

26.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

26.4.1. Environment

No data available

26.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

27. ES-26: Production of rigid foam

27.1. Title section

Production of rigid foam

ES Ref.: ES-26
ES Type: Consumer

Company ES code: ES-25
Association ref code: C-25

Consumer

CS-1	Production of rigid foam	PC32
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Processes, tasks, activities covered	Consumer useX
Assessment method	ConsExpo

27.2. Conditions of use affecting exposure

27.2.1. Control of consumer exposure: Production of rigid foam (PC32)

PC32	Polymer preparations and compounds
------	------------------------------------

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	5 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation	0.825 kg
Dermal	0.00025 kg
Use frequency Inhalation	1 times per year
Use frequency Dermal	1 times per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	1900 cm ²
Inhalation, Assumes a room volume of maximum	57.5 m ³
Inhalation, Ventilation rate	1.5 m ³
Dermal, Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

27.3. Exposure estimation and reference to its source

27.3.1. Consumer exposure Production of rigid foam (PC32)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.192308 mg/kg bw/day	0.003628	EASY TRA
Inhalation - Long-term - systemic effects	6.416 mg/m ³	0.916564	EASY TRA
Sum RCR - Long-term - systemic effects		0.92	

27.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

27.4.1. Environment

No data available

27.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

28. ES-27: Use in biocidal products

28.1. Title section

Use in biocidal products

ES Ref.: ES-27
ES Type: Consumer

Company ES code: ES-13
Association ref code: C-13

Consumer

CS-1	Use in Biocidal products-Part A. Spraying	PC8
CS-2	Use in Biocidal products-Part B. Wiping	PC8

Processes, tasks, activities covered	Consumer useX
Assessment method	ConsExpo

28.2. Conditions of use affecting exposure

28.2.1. Control of consumer exposure: Use in Biocidal products-Part A. Spraying (PC8)

PC8	Biocidal products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Inhalation,Spray duration	30.6 Seconds
Dermal,Release duration	2.6 Seconds
Use frequency	365 days per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	1900 cm ²
Contact rate	0.000046 kg/min
Inhalation,Assumes a room volume of maximum	15 m ³
Inhalation,Ventilation rate	2.5 m ³
Inhalation,Mass generation rate	0.075 kg/min
Inhalation,Airborne fraction	20 %
Dermal,Uptake fraction	100 %

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

28.2.2. Control of consumer exposure: Use in Biocidal products-Part B. Wiping (PC8)

PC8	Biocidal products
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	10 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Dermal	0.00002 kg
Use frequency	365 days per year

Other conditions affecting consumer exposure

Exposed skin surface assumed:	215 cm ²
Dermal,Uptake fraction	100 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

28.3. Exposure estimation and reference to its source

28.3.1. Consumer exposure Use in Biocidal products-Part A. Spraying (PC8)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.003067 mg/kg bw/day	0.000579	EASY TRA
Inhalation - Long-term - systemic effects	0.001406 mg/m ³	0.002009	EASY TRA
Sum RCR - Long-term - systemic effects		0.003	

28.3.2. Consumer exposure Use in Biocidal products-Part B. Wiping (PC8)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.030769 mg/kg bw/day	0.001465	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

28.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

28.4.1. Environment

No data available

28.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

29. ES-28: Use in water treatment agents

29.1. Title section

Use in water treatment agents

ES Ref.: ES-28
ES Type: Worker

Company ES code: ES-27
Association ref code: PW-27

Worker

CS-1	Use in closed process, no likelihood of exposure	PROC1
CS-2	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-3	Use in closed batch process (synthesis or formulation)	PROC3
CS-4	Chemical production where opportunity for exposure arises	PROC4
CS-5	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	PROC8a
CS-6	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	PROC8b
CS-7	Treatment of articles by dipping and pouring	PROC13

Processes, tasks, activities covered

Professional useX

Assessment method

EasyTRA 4.1.0

29.2. Conditions of use affecting exposure

29.2.1. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

PROC1

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to
Exposure duration

> 5 days/week
> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
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Indoor use	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

29.2.2. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

29.2.3. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of one hand
Indoor use	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

29.2.4. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

PROC4	Chemical production where opportunity for exposure arises
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
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Ventilation, Good	30 % Effectiveness
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Indoor use	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

29.2.5. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
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Concentration of substance in product	100 %
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Vapour pressure	0.008 hPa
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Viscosity, dynamic	30 mPa·s
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Viscosity, kinematic	33 mm ² /s
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Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to	> 5 days/week
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Exposure duration	> 4 h/day
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Technical and organisational conditions and measures

Local exhaust ventilation	Effectiveness. 80%
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
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Protective gloves	None
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Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
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Indoor use	
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Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

See chapter 8 of the safety data sheet (Environmental exposure controls).

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

29.2.6. Control of worker exposure: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

29.2.7. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Ventilation, Good	30 % Effectiveness
Indoor use	

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

29.3. Exposure estimation and reference to its source

29.3.1. Worker exposure Use in closed process, no likelihood of exposure (PROC1)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.034286 mg/kg bw/day	0.000323	EASY TRA
Inhalation - Long-term - systemic effects	0.025862 mg/m ³	0.000739	EASY TRA
Sum RCR - Long-term - systemic effects		0.001	

29.3.2. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.382	

29.3.3. Worker exposure Use in closed batch process (synthesis or formulation) (PROC3)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	0.685714 mg/kg bw/day	0.006469	EASY TRA
Inhalation - Long-term - systemic effects	7.758 mg/m ³	0.221671	EASY TRA
Sum RCR - Long-term - systemic effects		0.228	

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

29.3.4. Worker exposure Chemical production where opportunity for exposure arises (PROC4)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	6.857 mg/kg bw/day	0.06469	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.804	

29.3.5. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities (PROC8a)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	12.931 mg/m ³	0.369451	EASY TRA
Sum RCR - Long-term - systemic effects		0.499	

29.3.6. Worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC8b)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.868	

29.3.7. Worker exposure Treatment of articles by dipping and pouring (PROC13)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	25.862 mg/m ³	0.738902	EASY TRA
Sum RCR - Long-term - systemic effects		0.752	

29.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

29.4.1. Environment

No data available

29.4.2. Health

No data available

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

30. ES-29: Use as Oilfield chemicals

30.1. Title section

Use as Oilfield chemicals

ES Ref.: ES-29
ES Type: Worker

Company ES code: ES-29

Worker

CS-1	Use in closed, continuous process with occasional controlled exposure	PROC2
CS-2	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).	PROC5
CS-3	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities	PROC8a

Processes, tasks, activities covered	Industrial useX
Assessment method	EasyTRA 4.1.0

30.2. Conditions of use affecting exposure

30.2.1. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Covers outdoor use	30 %

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

30.2.2. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

PROC5	Mixing or blending in batch processes
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves. Assigned Protection Factor (APF) of 10	90 % Effectiveness

Other conditions affecting workers exposure

Exposed skin surface assumed:	Palm of both hands
Covers outdoor use	30 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

30.2.3. Control of worker exposure: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
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Product (article) characteristics

Physical form of product	Liquid
Concentration of substance in product	100 %
Vapour pressure	0.008 hPa
Viscosity, dynamic	30 mPa·s
Viscosity, kinematic	33 mm ² /s

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

Covers exposure up to	> 5 days/week
Exposure duration	> 4 h/day

ETHYLENE GLYCOL (Premium Grade, First Grade)

Annex to the safety data sheet: Exposure scenario

CAS-No.: 107-21-1 Product form: Substance Physical state: Liquid Substance type: Mono-constituent

Technical and organisational conditions and measures

Local exhaust ventilation	None
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Conditions and measures related to personal protection, hygiene and health evaluation

Respiratory protection	None
Protective gloves	None

Other conditions affecting workers exposure

Exposed skin surface assumed:	Both hands
Covers outdoor use	30 %

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

See chapter 8 of the safety data sheet (Environmental exposure controls).

30.3. Exposure estimation and reference to its source

30.3.1. Worker exposure Use in closed, continuous process with occasional controlled exposure (PROC2)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	1.371 mg/kg bw/day	0.012938	EASY TRA
Inhalation - Long-term - systemic effects	1.81 mg/m ³	0.051723	EASY TRA
Sum RCR - Long-term - systemic effects		0.065	

30.3.2. Worker exposure Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). (PROC5)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	
Inhalation - Long-term - systemic effects	9.052 mg/m ³	0.258616	
Sum RCR - Long-term - systemic effects		0.388	

30.3.3. Worker exposure Transfer of substance or mixture (charging and discharging) at non-dedicated facilities (PROC8a)

Information for contributing exposure scenario

Route of exposure and type of effects	Exposure estimate	RCR	Method
Dermal - Long-term - systemic effects	13.714 mg/kg bw/day	0.12938	
Inhalation - Long-term - systemic effects	18.103 mg/m ³	0.517232	
Sum RCR - Long-term - systemic effects		0.647	

30.4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

30.4.1. Environment

No data available

30.4.2. Health

No data available