Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 25.03.2026 *Version number 37 (replaces version 36)* *Revision: 25.03.2026*

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

· **1.1 Product identifier**
· **Trade name: Ethyl alcohol**
· **SDS number:** CH0044
· **CAS Number:**
64-17-5

· **EC number:**
200-578-6
· **Index number:**
603-002-00-5
· **Registration number** 01-2119457610-43
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
For professional users only
No further relevant information available.
· **Life cycle stages**
IS Use at industrial Sites
M Manufacture
F Formulation or re-packing
· **Sector of Use**
SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU24 Scientific research and development
· **Product category**
PC9a Coatings and paints, thinners, paint removers
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals
PC29 Pharmaceuticals
PC40 Extraction agents
· **Process category**
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
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)
PROC10 Roller application or brushing
PROC11 Non industrial spraying
PROC14 Tabletting, compression, extrusion, pelletisation, granulation
PROC15 Use as laboratory reagent
· **Environmental release category**
ERC1 Manufacture of the substance
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6a Use of an intermediary
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
· **Application of the substance / the mixture** Chemicals products for laboratory

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
CARLO ERBA REAGENTS
Chaussée du Vexin
Parc d'Affaires des Portes - BP616

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27106 VAL DE REUIL Cedex
Téléphone: +33 (0)2 32 09 20 00
Télécopie: +33 (0)2 32 09 20 20
· ***Further information obtainable from:***
Q.A / Normative
email: MSDS_CER-SDS@cer.dgroup.it
· ***1.4 Emergency telephone number:***
Ireland - Tel : 00 353 1 8092568 - 00 353 1 8379964 (24h/24)
EU Tel : 112

SECTION 2: Hazards identification

· ***2.1 Classification of the substance or mixture***
· ***Classification according to Regulation (EC) No 1272/2008***



GHS02 flame

Flam. Liq. 2 H225 Highly flammable liquid and vapour.



GHS07

Eye Irrit. 2 H319 Causes serious eye irritation.

· ***2.2 Label elements***
· ***Labelling according to Regulation (EC) No 1272/2008***
The substance is classified and labelled according to the CLP regulation.
· ***Hazard pictograms***



GHS02 GHS07

· ***Signal word*** *Danger*
· ***Hazard statements***
H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
· ***Precautionary statements***
P210 *Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*
P241 *Use explosion-proof [electrical/ventilating/lighting] equipment.*
P280 *Wear protective gloves / eye protection / face protection.*
P303+P361+P353 *IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].*
P305+P351+P338 *IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P337+P313 *If eye irritation persists: Get medical advice/attention.*
· ***2.3 Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable*
· ***vPvB:*** *Not applicable*

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· ***Determination of endocrine-disrupting properties*** *Not applicable*

SECTION 3: Composition/information on ingredients

· ***3.1 Substances***

· ***CAS No. Description***
CAS: 64-17-5 Ethyl alcohol

· ***Identification number(s)***

· ***EC number:*** *200-578-6*

· ***Index number:*** *603-002-00-5*
· ***Specific concentration limits*** *Eye Irrit. 2; H319: C ≥ 50 %*

SECTION 4: First aid measures

· ***4.1 Description of first aid measures***
· ***General information:*** *Involve doctor immediately.*
· ***After inhalation:*** *Supply fresh air; consult a doctor in case of complaints.*
· ***After skin contact:***
Immediately wash with water and soap and rinse thoroughly. Wash contaminated clothing before reuse.
If skin irritation continues, consult a doctor.
· ***After eye contact:***
Rinse opened eye for several minutes under running water. Then consult a doctor.
Seek immediate medical advice.
· ***Information for doctor:*** *Show the doctor this Material Safety Data Sheet.*
· ***4.2 Most important symptoms and effects, both acute and delayed*** *No further relevant information available.*
· ***4.3 Indication of any immediate medical attention and special treatment needed***
No further relevant information available.

SECTION 5: Firefighting measures

· ***5.1 Extinguishing media***
· ***Suitable extinguishing agents:*** *CO2 or alcohol resistant foam.*
· ***For safety reasons unsuitable extinguishing agents:*** *Water with full jet.*
· ***5.2 Special hazards arising from the substance or mixture*** *Carbon monoxide and carbon dioxide*
· ***5.3 Advice for firefighters***
· ***Protective equipment:*** *Do not inhale gases in case or fire or combustion.*
· ***Additional information*** *Keep receptacles cool with water spray.*

SECTION 6: Accidental release measures

· ***6.1 Personal precautions, protective equipment and emergency procedures***
Keep away any ignition source.
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
· ***6.2 Environmental precautions:***
Do not allow to penetrate the ground/soil.
Dilute with plenty of water after collecting the liquid.
Prevent seepage into sewage system, workpits and cellars.

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· ***6.3 Methods and material for containment and cleaning up:***
Collect the liquid with vacuum in a suitable container and absorb the remainder with a porous material (diatomite, acid binders, universal binders, etc).
Ensure adequate ventilation.
· ***6.4 Reference to other sections***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· ***7.1 Precautions for safe handling***
Store in cool, dry place in tightly closed receptacles.
Ensure good ventilation/exhaustion at the workplace.
Only handle and refill product in closed systems or under local exhaust.
Pneumatic conveyance only with nitrogen or other inert gases.
· ***Information about fire - and explosion protection:***



Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
Store in a cool location.
Use only receptacles specifically permitted for this substance/product.
· ***Information about storage in one common storage facility:*** *Not required*
· ***Further information about storage conditions:*** *Store in cool, dry conditions in well sealed receptacles.*
· ***7.3 Specific end use(s)*** *No further relevant information available.*

SECTION 8: Exposure controls/personal protection

· ***8.1 Control parameters***
· ***Ingredients with limit values that require monitoring at the workplace:*** *TLV not established.*

· **DNELs**		
Dermal	*DNEL (workers-systemic chronic effects)*	*343 mg/kg*
Inhalative	*DNEL (workers-local effects Acute)*	*19 mg/m3*
	DNEL (workers-systemic chronic effects)	*950 mg/m3*

· **PNECs**	
PNEC (Fresh water)	*0.96 mg/l*
PNEC (Freshwater sediment)	*3.6 mg/kg*
PNEC (Marine water)	*0.79 mg/l*
PNEC (Seawater sediment)	*2.9 mg/l*
PNEC (STP)	*580 mg/l*
PNEC (Soil)	*0.63 mg/kg*

· ***Additional information:*** *The lists valid during the making were used as basis.*

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· ***8.2 Exposure controls***
· ***Appropriate engineering controls*** *No further data; see section 7.*
· ***Individual protection measures, such as personal protective equipment***
· ***General protective and hygienic measures:***
The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Avoid contact with the eyes.
· ***Respiratory protection:***
Use suitable respiratory protective device only when aerosol or mist is formed.
Filter AX
Filter P2
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
· ***Hand protection***
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Rubber gloves
· ***Material of gloves***
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· ***Penetration time of glove material***
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
· ***For the permanent contact gloves made of the following materials are suitable:***
The penetration time has to be at least 480 minutes
Butyl rubber, BR
Recommended thickness of the material: ≥ 0.5 mm
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.4 mm
· ***Eye/face protection***



Tightly sealed goggles

· ***Environmental exposure controls***
In case of unintended release of the product: See section 6 of the Safety Data Sheet.
· ***Risk management measures*** *Keep good industrial hygiene.*

SECTION 9: Physical and chemical properties

· ***9.1 Information on basic physical and chemical properties***	
· ***Molecular weight***	*46 g*
· ***Physical state***	*Liquid*
· ***Colour:***	*Colourless*
· ***Odour:***	*Alcohol-like*
· ***Odour threshold:***	*Not determined*
· ***Melting point/freezing point:***	*-114.5 °C*

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· **Boiling point or initial boiling point and boiling range**	78 °C
· **Flammability**	Highly flammable.
· **Lower and upper explosion limit**	
· **Lower:**	3.5 Vol %
· **Upper:**	27.7 Vol %
· **Flash point:**	13 °C
· **Auto-ignition temperature:**	425 °C
· **Decomposition temperature:**	Not determined
· **pH**	7
· **Viscosity:**	
· **Kinematic viscosity**	Not determined
· **Dynamic at 20 °C:**	1.2 mPas
· **Solubility**	
· **water:**	Fully miscible.
· **organic solvents:**	Miscible with many organic solvents.
· **Partition coefficient n-octanol/water (log value)**	-0.30016
· **Vapour pressure at 20 °C:**	59 hPa
· **Vapour pressure at 50 °C:**	280 hPa
· **Density and/or relative density**	
· **Density at 20 °C:**	0.79 g/cm³
· **Relative density**	Not determined
· **Vapour density**	Not determined

· **9.2 Other information**	
· **Appearance:**	
· **Form:**	Fluid
· **Important information on protection of health and environment, and on safety.**	
· **Ignition temperature:**	Not determined
· **Explosive properties:**	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
· **Molecular formula**	C2 H6 O
· **Molecular weight**	46 g/mol
· **Refractive index**	1.3611
· **Change in condition**	
· **Evaporation rate**	Not determined

· **Information with regard to physical hazard classes**	
· **Explosives**	Void
· **Flammable gases**	Void
· **Aerosols**	Void
· **Oxidising gases**	Void
· **Gases under pressure**	Void
· **Flammable liquids**	Highly flammable liquid and vapour.
· **Flammable solids**	Void
· **Self-reactive substances and mixtures**	Void
· **Pyrophoric liquids**	Void
· **Pyrophoric solids**	Void
· **Self-heating substances and mixtures**	Void
· **Substances and mixtures, which emit flammable gases in contact with water**	Void
· **Oxidising liquids**	Void
· **Oxidising solids**	Void
· **Organic peroxides**	Void

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· ***Corrosive to metals***	*Void*
· ***Desensitised explosives***	*Void*

SECTION 10: Stability and reactivity

· ***10.1 Reactivity*** *See 10.3*
· ***10.2 Chemical stability***
· ***Thermal decomposition / conditions to be avoided:***
No decomposition if used and stored according to specifications.
· ***10.3 Possibility of hazardous reactions*** *No dangerous reactions known.*
· ***10.4 Conditions to avoid***
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
· ***10.5 Incompatible materials:*** *No further relevant information available.*
· ***10.6 Hazardous decomposition products:*** *Carbon monoxide, Carbon dioxide.*

SECTION 11: Toxicological information

· ***11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008***
· ***Acute toxicity*** *Based on available data, the classification criteria are not met.*

· ***LD/LC50 values relevant for classification:***		
Oral	*LD50*	*6,200-15,000 mg/kg (rat)*
Dermal	*LD50*	*17,100 mg/kg (rabbit)*
Inhalative	*LC50/4 h*	*117 mg/L (rat)*
	LC50	*>50 mg/m³ (rat)*

· ***Primary irritant effect:***
· ***Skin corrosion/irritation*** *Based on available data, the classification criteria are not met.*
· ***Serious eye damage/irritation***
Strong irritant with the danger of severe eye injury.
Causes serious eye irritation.
· ***Respiratory or skin sensitisation*** *Based on available data, the classification criteria are not met.*
· ***Germ cell mutagenicity*** *Based on available data, the classification criteria are not met.*
· ***Carcinogenicity*** *Based on available data, the classification criteria are not met.*
· ***Reproductive toxicity*** *Based on available data, the classification criteria are not met.*
· ***STOT-single exposure*** *Based on available data, the classification criteria are not met.*
· ***STOT-repeated exposure*** *Based on available data, the classification criteria are not met.*
· ***Aspiration hazard*** *Based on available data, the classification criteria are not met.*
· ***Other information (about experimental toxicology):*** *No further relevant information available.*
· ***11.2 Information on other hazards***
· ***Endocrine disrupting properties*** *Substance is not listed.*

*
SECTION 12: Ecological information

· ***12.1 Toxicity***

· ***Aquatic toxicity:***	
EC50/48h	*5,012 mg/l (Daphnia) (freshwater)*
EC50	*72 mg/L (algae)*
LC50/96h	*11,200 mg/l (fishes) (freshwater)*

· ***12.2 Persistence and degradability*** *No further relevant information available.*

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· ***Method***
· ***Ecological information*** *Not available*
· ***Other information:*** *The product is easily biodegradable.*
· ***12.3 Bioaccumulative potential*** *No further relevant information available.*
· ***12.4 Mobility in soil*** *No further relevant information available.*
· ***12.5 Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable*
· ***vPvB:*** *Not applicable*
· ***12.6 Endocrine disrupting properties***
The product does not contain substances with endocrine disrupting properties.
· ***12.7 Other adverse effects***
· ***Remark:*** *Local effects: may change the environmental pH endangering the aquatic life.*
· ***Additional ecological information:***
· ***General notes:***
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

*
SECTION 13: Disposal considerations

· ***13.1 Waste treatment methods***
· ***Recommendation***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Reutilise if possible or contact a waste processors for recycling or safe disposal.
· ***Waste disposal key:***
The European Union does not establish uniform rules for the disposal of chemical waste, which are special waste. Their treatment and elimination of the domestic legislation of each country. So, in each case, you should contact the relevant authorities, or those companies legally authorized for elimination of waste.
2014/955/UE: Council Decision of 18 December 2014 amending the list of wastes contained in Decision 2000/532/EC.
Directive 2008/98/EC of the european parliament and of the council of 18 November 2008, in ist latest valid version.

· ***European waste catalogue***	
07 00 00	*WASTES FROM ORGANIC CHEMICAL PROCESSES*
07 01 00	*wastes from the manufacture, formulation, supply and use (MFSU) of basic organic chemicals*
*07 01 04**	*other organic solvents, washing liquids and mother liquors*
HP3	*Flammable*
HP4	*Irritant - skin irritation and eye damage*

· ***Uncleaned packaging:***
The containers and packaging materials contaminated with dangerous substances or preparations, have the same treatment of products.
Directive 94/62/EC of the European Parliament and the Council of 20 December 1994 on packaging and packaging waste.
· ***Recommendation:***
Disposal must be made according to official regulations.
Packagings that may not be cleansed are to be disposed of in the same manner as the product.
· ***Recommended cleansing agents:*** *Water, if necessary together with cleansing agents.*

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SECTION 14: Transport information

· **14.1 UN number or ID number**	
· **ADR/RID, IMDG, IATA**	UN1170
· **14.2 UN proper shipping name**	
· **ADR/RID**	1170 ETHANOL (ETHYL ALCOHOL)
· **IMDG**	ETHANOL (ETHYL ALCOHOL)
· **IATA**	Ethanol
· **14.3 Transport hazard class(es)**	
· **ADR/RID**	
	
· **Class**	3 (F1) Flammable liquids.
· **Label**	3
· **IMDG, IATA**	
	
· **Class**	3 Flammable liquids.
· **Label**	3
· **14.4 Packing group**	
· **ADR/RID, IMDG, IATA**	II
· **14.5 Environmental hazards:**	
· **Marine pollutant:**	No
· **14.6 Special precautions for user**	Warning: Flammable liquids.
· **Hazard identification number (Kemler code):**	33
· **EMS Number:**	F-E,S-D
· **Stowage Category**	A
· **14.7 Maritime transport in bulk according to IMO instruments**	Not applicable
· **Transport/Additional information:**	
· **ADR/RID**	
· **Excepted quantities (EQ):**	E2
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **Transport category**	2
· **Tunnel restriction code**	D/E
· **IMDG**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml

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· **UN "Model Regulation":** UN 1170 ETHANOL (ETHYL ALCOHOL), 3, II

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **SARA Section 355 (extremely hazardous substances)** Substance is not listed.
· **SARA Section 313 (specific toxic chemical listings)** Substance is not listed.
· **Prop 65 - Chemicals known to cause cancer** Substance is not listed.

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** Substance is not listed.
· **Seveso category** P5c FLAMMABLE LIQUIDS
· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t
· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 t
· **REGULATION (EU) 2019/1021 on persistent organic pollutants (POP)** Substance is not listed.
· **LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV)** Substance is not listed.
· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 40, 75
· **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**
Substance is not listed.
· **REGULATION (EU) 2024/590 on substances that deplete the ozone layer** Substance is not listed.
· **National regulations:**

· **Technical instructions (air):**

Class	Share in %
NK	50-100

· **Waterhazard class:** Water hazard class 1 (Assessment by list): slightly hazardous for water.

· **Other regulations, limitations and prohibitive regulations**
· **Substances of very high concern (SVHC) according to REACH, Article 57** Substance is not listed.
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** Q.A./Normative
· **Date of previous version:** 19.03.2021
· **Version number of previous version:** 36
· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
RCR : Risk Characterisation Ratio
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent

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LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative
ATE: Acute toxicity estimate values
Flam. Liq. 2: Flammable liquids – Category 2
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

· ***Sources***
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006, REACH, in the latest valid version.
Regulation (EC) N° 1272/2008 of the European Parliament and of the Council of 16 December 2008, CLP, in the latest valid version.
Globally Harmonized System, GHS
ADR/RID, IMDG, IATA
PubChem : an open chemistry database at the National Institutes of Health (NIH)
ECHA : European CHemicals Agency
GESTIS : Information system on hazardous substances of the German Social Accident Insurance

· **** Data compared to the previous version altered.*** .

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Annex: Exposure scenario 1

· **Short title of the exposure scenario** Substance manufacturing
· **Sector of Use**
Industrial use.
SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
· **Process category**
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
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
· **Environmental release category**
ERC1 Manufacture of the substance
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
· **Description of the activities / processes covered in the Exposure Scenario**
See section 1 of the annex to the Safety Data Sheet.
· **Conditions of use** Customary application according to section 1.
· **Duration and frequency** 5 workdays/week.
· **Worker**
5 workdays/week.
8hrs (full working shift).
· **Physical parameters**
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· **Physical state** Fluid
· **Concentration of the substance in the mixture** Raw material.
· **Used amount per time or activity** 200000 tons per year
· **Other operational conditions** Observe the general safety regulations when handling chemicals.
· **Other operational conditions affecting environmental exposure**
Observe section 6 of the Safety Data Sheet (Accidental release measures).
· **Other operational conditions affecting worker exposure**
Take precautionary measures against static discharge.
Keep away from sources of ignition - No smoking.
Keep container tightly closed.
Indoor application.
· **Risk management measures**
· **Worker protection**
· **Organisational protective measures**
Keep good industrial hygiene.
Ensure that activities are executed by specialists or authorised personnel only.
Deploy only trained chemical workers.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
For special applications, it is recommended to verify the chemical resistance of the above stated protective gloves with the manufacturer.
Provide sufficient washing facilities.
Work clothes must not consist of textiles that exhibit dangerous melting behaviour in case of fire.

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· ***Technical protective measures***
The work process has to be performed under closed conditions.
Provide explosion-proof electrical equipment.
Ensure good ventilation/exhaustion at the workplace.
· ***Personal protective measures***
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Rubber gloves
Tightly sealed goggles
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Use suitable respiratory protective device only when aerosol or mist is formed.
Filter AX
Filter P2
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
· ***Environmental protection measures***
· ***Water*** *Do not allow to reach sewage system.*
· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures***
Disposal must be made according to official regulations.
Ensure that waste is collected and contained.
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
The highest dermal exposure to be expected is 13.71 mg / kg / day.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (inhalation)***
The highest inhalative exposure to be expected is 50 ppm.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Environment***
The highest environmental exposure to be expected in purification plants is 5.65 mg / L.
The highest environmental exposure to be expected for surface waters is 0.0742 mg / L.
The highest environmental exposure to be expected for soil is 0.00736 mg / kg wet weight.
· ***Guidance for downstream users***
For the risk assessment, the tools recommended by ECHA can be used.
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.

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Annex: Exposure scenario 2

· ***Short title of the exposure scenario*** *Formulation or re-packing*
· ***Sector of Use***
Industrial use.
Substance for the industrial manufacture of preparations/mixtures.
· ***Process category***
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC5 Mixing or blending in batch processes
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)
PROC14 Tabletting, compression, extrusion, pelletisation, granulation
· ***Environmental release category*** *ERC2 Formulation into mixture*
· ***Description of the activities / processes covered in the Exposure Scenario***
See section 1 of the annex to the Safety Data Sheet.
· ***Conditions of use***
According to directions for use.
Customary application according to section 1.
· ***Duration and frequency*** *5 workdays/week.*
· ***Worker*** *Long-term.*
· ***Environment*** *The product must not be released into the environment.*
· ***Physical parameters***
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· ***Physical state*** *Fluid*
· ***Concentration of the substance in the mixture*** *Raw material.*
· ***Used amount per time or activity***
30000 tons per year
100000 kg per day
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure*** *No special measures required.*
· ***Other operational conditions affecting worker exposure***
Observe section 6 of the Safety Data Sheet (Accidental release measures).
Take precautionary measures against static discharge.
Keep away from sources of ignition - No smoking.
· ***Risk management measures***
· ***Worker protection***
· ***Organisational protective measures***
Keep good industrial hygiene.
Ensure that activities are executed by specialists or authorised personnel only.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
Provide sufficient washing facilities.
Work clothes must not consist of textiles that exhibit dangerous melting behaviour in case of fire.
· ***Technical protective measures***
Carry out filling operations only at sites with extractors available.
Provide explosion-proof electrical equipment.
Ensure good ventilation/exhaustion at the workplace.
· ***Personal protective measures***
Protective work clothing
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.

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Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Face protection
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Use suitable respiratory protective device only when aerosol or mist is formed.
Filter P2
· ***Environmental protection measures***
· ***Water*** *Do not allow to reach sewage system.*
· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
The highest dermal exposure to be expected is 13.71 mg / kg / day.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (inhalation)***
The highest inhalative exposure to be expected is 50 ppm.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Environment***
The highest environmental exposure to be expected in purification plants is 0.00533 mg / L.
The highest environmental exposure to be expected for surface waters is 0.00291 mg / L.
The highest environmental exposure to be expected for soil is 0.00162 mg / kg wet weight.
· ***Guidance for downstream users***
For the risk assessment, the tools recommended by ECHA can be used.
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.

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Annex: Exposure scenario 3

· ***Short title of the exposure scenario*** *Chemicals products for laboratory*
· ***Sector of Use*** *Industrial use.*
· ***Process category*** *PROC15 Use as laboratory reagent*
· ***Environmental release category***
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
· ***Description of the activities / processes covered in the Exposure Scenario***
See section 1 of the annex to the Safety Data Sheet.
· ***Conditions of use***
Customary application according to section 1.
According to directions for use.
· ***Duration and frequency*** *5 workdays/week.*
· ***Worker*** *8hrs (full working shift).*
· ***Physical parameters***
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· ***Physical state*** *Fluid*
· ***Concentration of the substance in the mixture*** *Raw material.*
· ***Used amount per time or activity***
20 tons per year
1000 kg per day
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure*** *No special measures required.*
· ***Other operational conditions affecting worker exposure***
Take precautionary measures against static discharge.
Keep away from sources of ignition - No smoking.
· ***Risk management measures***
· ***Worker protection***
· ***Organisational protective measures***
Keep good industrial hygiene.
Ensure that activities are executed by specialists or authorised personnel only.
Provide sufficient washing facilities.
Work clothes must not consist of textiles that exhibit dangerous melting behaviour in case of fire.
· ***Technical protective measures***
Provide explosion-proof electrical equipment.
Ensure good ventilation/exhaustion at the workplace.
· ***Personal protective measures***
Do not inhale gases / fumes / aerosols.
Tightly sealed goggles
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Use suitable respiratory protective device only when aerosol or mist is formed.
Filter P2
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Protective work clothing

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· ***Environmental protection measures***
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
The highest dermal exposure to be expected is 0.34 mg / kg / day.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (inhalation)***
The highest inhalative exposure to be expected is 10 ppm.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Environment***
The highest environmental exposure to be expected in purification plants is 1 mg / L.
The highest environmental exposure to be expected for surface waters is 0.0155 mg / L.
The highest environmental exposure to be expected for soil is 0.00215 mg / kg wet weight.
· ***Guidance for downstream users***
For the risk assessment, the tools recommended by ECHA can be used.
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.