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

Printing date 25.03.2026 Version number 28 (replaces version 27) Revision: 25.03.2026

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

· **1.1 Product identifier**
· **Trade name: toluene**
· **SDS number:** CH0026
· **CAS Number:**
108-88-3

· **EC number:**
203-625-9
· **Index number:**
601-021-00-3
· **Registration number** 01-2119471310-51
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
For professional users only
· **Life cycle stages**
IS Use at industrial Sites
F Formulation or re-packing
· **Sector of Use**
SU9 Manufacture of fine chemicals
SU24 Scientific research and development
· **Product category**
PC21 Laboratory chemicals
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
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
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
· **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
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

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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.



GHS08 health hazard

Repr. 2 H361d Suspected of damaging the unborn child.
STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.
Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.
STOT SE 3 H336 May cause drowsiness or dizziness.

· ***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 GHS08

· ***Signal word*** *Danger*
· ***Hazard statements***
H225 Highly flammable liquid and vapour.
H315 Causes skin irritation.
H361d Suspected of damaging the unborn child.
H336 May cause drowsiness or dizziness.
H373 May cause damage to organs through prolonged or repeated exposure.
H304 May be fatal if swallowed and enters airways.
· ***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].

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P304+P340 *IF INHALED: Remove person to fresh air and keep comfortable for breathing.*
P403+P233 *Store in a well-ventilated place. Keep container tightly closed.*

· ***2.3 Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable*
· ***vPvB:*** *Not applicable*
· ***Determination of endocrine-disrupting properties*** *Not applicable*

SECTION 3: Composition/information on ingredients

· ***3.1 Substances***

· ***CAS No. Description***
CAS: 108-88-3 toluene

· ***Identification number(s)***

· ***EC number:*** *203-625-9*

· ***Index number:*** *601-021-00-3*

SECTION 4: First aid measures

· ***4.1 Description of first aid measures***
· ***After inhalation:*** *In case of unconsciousness place patient stably in side position for transportation.*
· ***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. If symptoms persist, consult a doctor.
Seek immediate medical advice.
· ***After swallowing:***
Rinse out mouth and then drink plenty of water.
Call a doctor immediately.
· ***Information for doctor:*** *Show the doctor this Material Safety Data Sheet.*
· ***4.2 Most important symptoms and effects, both acute and delayed***
Headache
Unconsciousness
Dizziness
· ***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:***
Fire-extinguishing powder
Carbon dioxide
Water spray
Foam
Sand
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*

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· ***5.3 Advice for firefighters***
· ***Protective equipment:***
Wear self-contained respiratory protective device.
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.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Ensure adequate ventilation
· ***6.2 Environmental precautions:***
Do not allow to penetrate the ground/soil.
Do not allow product to reach sewage system or any water course.
Prevent seepage into sewage system, workpits and cellars.
· ***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.
Dispose contaminated material as waste according to section 13.
· ***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.
Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.
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.
Keep respiratory protective device available.

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
Suitable material for receptacles and pipes: Stainless steel.
Store in a cool location.
Use only receptacles specifically permitted for this substance/product.
· ***Information about storage in one common storage facility:***
Store away from oxidizing agents.
Do not keep in contact with acids.

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· ***Further information about storage conditions:***
Keep receptacle tightly sealed.
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:**	
CAS: 108-88-3 toluene	
IOELV	Short-term value: 384 mg/m³, 100 ppm Long-term value: 192 mg/m³, 50 ppm Skin

· **DNELs**		
Dermal	DNEL (workers-systemic chronic effects)	384 mg/kg (bw/day)
Inhalative	DNEL (workers-local effects Acute)	384 mg/m3
	DNEL (workers-acute systemic)	384 mg/m3
	DNEL (workers-local chronic effects)	192 mg/m3
	DNEL (workers-systemic chronic effects)	192 mg/m3

· **PNECs**	
PNEC (Fresh water)	0.68 mg/l
PNEC (Freshwater sediment)	16.39 mg/kg
PNEC (Marine water)	0.68 mg/l
PNEC (Seawater sediment)	16.39 mg/l
PNEC (STP)	13.61 mg/l
PNEC (Soil)	2.89 mg/kg

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

· ***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.
Immediately remove all soiled and contaminated clothing
Store protective clothing separately.
Avoid contact with the eyes and skin.
Pregnant women should strictly avoid inhalation or skin contact.
· ***Respiratory protection:***
Use suitable respiratory protective device only when aerosol or mist is formed.
Filter A/P2



In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

The selected respiratory protection must comply with standard EN 136/140/143/145/149.

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· ***Hand protection***
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
· ***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
Fluorocarbon rubber (Viton)
Recommended thickness of the material: ≥ 0.4 mm
PVA gloves
· ***As protection from splashes gloves made of the following materials are suitable:***
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.55 mm
· ***Not suitable are gloves made of the following materials:***
Natural rubber, NR
Chloroprene rubber, CR
Butyl rubber, BR
PVC gloves
· ***Eye/face protection***



Tightly sealed goggles

· ***Body protection:*** *Solvent resistant protective clothing*
· ***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***	*92.14 g*
· ***Physical state***	*Liquid*
· ***Colour:***	*Light yellow*
· ***Odour:***	*Aromatic*
· ***Odour threshold:***	*Not determined*
· ***Melting point/freezing point:***	*-95 °C*
· ***Boiling point or initial boiling point and boiling range***	*110-111 °C*
· ***Flammability***	*Highly flammable.*

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· **Lower and upper explosion limit**	
· **Lower:**	1.2 Vol %
· **Upper:**	7 Vol %
· **Flash point:**	4.4 °C
· **Auto-ignition temperature:**	480 °C
· **Decomposition temperature:**	Not determined
· **pH**	Not determined
· **Viscosity:**	
· **Kinematic viscosity**	Not determined
· **Dynamic at 20 °C:**	0.6 mPas
· **Solubility**	
· **water at 15 °C:**	0.5 g/l
· **organic solvents:**	Soluble in many organic solvents.
· **Partition coefficient n-octanol/water (log value)**	2.7
· **Vapour pressure at 20 °C:**	29 hPa
· **Vapour pressure at 50 °C:**	124 hPa
· **Density and/or relative density**	
· **Density at 20 °C:**	0.87 g/cm³
· **Relative density**	Not determined
· **Bulk density:**	867 kg/m³
· **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**	C7 H8
· **Molecular weight**	92.14 g/mol
· **Refractive index**	1.4961
· **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
· **Corrosive to metals**	Void

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· **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**
Can react violently with oxygen rich (oxidizing) material. Danger of Explosion.
Reacts with strong oxidising agents.
Reacts with acids.
Used empty containers may contain product gases which form explosive mixtures with air.
· **10.4 Conditions to avoid**
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
· **10.5 Incompatible materials:**
Strong Oxidant.
Acids.
alkalis (caustic solutions)
· **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	5,580 mg/kg (rat)
Dermal	LD50	>5,000 mg/kg (rabbit)
Inhalative	LC50/4 h	28.1 mg/L (rat)

· **Primary irritant effect:**
· **Skin corrosion/irritation** Causes skin irritation.
· **Serious eye damage/irritation** Irritating effect.
· **Ingestion:** It can be harmfull if swallowed.
· **Inhalation:** May be harmful if inhaled. May cause respiratory tract 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** Suspected of damaging the unborn child.
· **STOT-single exposure** May cause drowsiness or dizziness.
· **STOT-repeated exposure** May cause damage to organs through prolonged or repeated exposure.
· **Aspiration hazard** May be fatal if swallowed and enters airways.
· **Other information (about experimental toxicology):** No further relevant information available.
· **Subacute to chronic toxicity:**
May afford troubles to the central nervous system in case of repeated exposure.
Cumulative effects in case of repeated exposures.
· **11.2 Information on other hazards**
· **Endocrine disrupting properties** Substance is not listed.

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SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**	
NOEC	10 mg/L (algae)
EC50/48h	3.78 mg/l (Daphnia)
EC50	134 mg/L (algae) (3h)
LC50/96h	5.5 mg/l (fishes)

· **12.2 Persistence and degradability** No further relevant information available.
· **Method**
· **Ecological information** Not available
· **Other information:** BOD5/ThOD = 20-25%
· **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**
· **Additional ecological information:**
· **General notes:**
Water danger class 3 (German Regulation) (Assessment by list): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.

*

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
HP5	Specific Target Organ Toxicity (STOT)/Aspiration Toxicity
HP10	Toxic for reproduction

· **Uncleaned packaging:**
The containers and packaging materials contaminated with dangerous substances or preparations, have the same treatment of products.

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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.
Evaporate last traces before disposal.

SECTION 14: Transport information

· **14.1 UN number or ID number**	
· **ADR/RID, IMDG, IATA**	UN1294
· **14.2 UN proper shipping name**	
· **ADR/RID**	1294 TOLUENE
· **IMDG**	TOLUENE
· **IATA**	Toluene
· **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**	B
· **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

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· **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
· **UN "Model Regulation":**	UN 1294 TOLUENE, 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 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, 48, 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 danger class 3 (Assessment by list): extremely 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:** 09.02.2021
· **Version number of previous version:** 27
· **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)

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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
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
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Repr. 2: Reproductive toxicity – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
Asp. Tox. 1: Aspiration hazard – Category 1

· ***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.*
· ***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
PROC15 Use as laboratory reagent
· ***Environmental release category*** *ERC1 Manufacture of the substance*
· ***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*** *8hrs (full working shift).*
· ***Worker*** *8hrs (full working shift).*
· ***Environment*** *300 d/y*
· ***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*** *300000 tons per year*
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure***
No special measures required.
Use only on hard ground.
· ***Other operational conditions affecting worker exposure***
Avoid contact with the skin.
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.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Provide sufficient washing facilities.
Persons, who tend to skin diseases or other hypersensitivity reactions of the skin, should not handle the product.
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.
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 that suitable extractors are available on processing machines

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Ensure good ventilation/exhaustion at the workplace.

· **Personal protective measures**
Avoid contact with the skin.
Pregnant women should strictly avoid inhalation or skin contact.
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
Tightly sealed goggles
Use suitable respiratory protective device only when aerosol or mist is formed.
Filter A/P2
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Solvent resistant protective clothing

· **Environmental protection measures**
· **Air** Exhaust air is introduced into the gas scrubber.
· **Water**
Do not allow to reach sewage system. Dispose of this product and its container at hazardous or special waste collection point.
Do not allow to reach sewage system.
Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.
· **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 calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.
· **Worker (inhalation)**
The exposure estimation was carried out in accordance with ECETOC TRA.
The calculated value is smaller than the DNEL.
· **Environment**
The calculated value is smaller than the PNEC.
The estimation of environmental exposure was carried out in accordance with EUSES.
· **Guidance for downstream users**
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.*
· ***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)
PROC14 Tabletting, compression, extrusion, pelletisation, granulation
PROC15 Use as laboratory reagent
· ***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*** *Customary application according to section 1.*
· ***Duration and frequency*** *8hrs (full working shift).*
· ***Worker*** *8hrs (full working shift).*
· ***Environment*** *300 d/y*
· ***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*** *15000 tons per year*
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure***
No special measures required.
Use only on hard ground.
· ***Other operational conditions affecting worker exposure***
Avoid contact with the skin.
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.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Persons, who tend to skin diseases or other hypersensitivity reactions of the skin, should not handle the product.
Provide sufficient washing facilities.
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.
Work clothes must not consist of textiles that exhibit dangerous melting behaviour in case of fire.
· ***Technical protective measures***
Ensure good ventilation/exhaustion at the workplace.

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Provide explosion-proof electrical equipment.

· ***Personal protective measures***

Avoid contact with the skin.
Pregnant women should strictly avoid inhalation or skin contact.
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.
Face protection
Use suitable respiratory protective device only when aerosol or mist is formed.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Protective work clothing

· ***Environmental protection measures***

· ***Water***

Do not allow to reach sewage system. Dispose of this product and its container at hazardous or special waste collection point.
Generally, prior to the introduction of wastewater into wastewater treatment plants a neutralisation is required.

· ***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 calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.

· ***Worker (inhalation)***

The exposure estimation was carried out in accordance with ECETOC TRA.
The calculated value is smaller than the DNEL.

· ***Environment***

The calculated value is smaller than the PNEC.
The estimation of environmental exposure was carried out in accordance with EUSES.

· ***Guidance for downstream users***

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***
· ***Sector of Use*** *Industrial use.*
· ***Process category***
PROC10 Roller application or brushing
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)
· ***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*** *8hrs (full working shift).*
· ***Worker*** *8hrs (full working shift).*
· ***Environment*** *300 d/y*
· ***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*** *1500 tons per year*
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure***
No special measures required.
Use only on hard ground.
· ***Other operational conditions affecting worker exposure***
Avoid contact with the skin.
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.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Persons, who tend to skin diseases or other hypersensitivity reactions of the skin, should not handle the product.
Provide sufficient washing facilities.
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.
Work clothes must not consist of textiles that exhibit dangerous melting behaviour in case of fire.
· ***Technical protective measures***
Ensure good ventilation/exhaustion at the workplace.
Provide explosion-proof electrical equipment.
· ***Personal protective measures***
Avoid contact with the skin.
Pregnant women should strictly avoid inhalation or skin contact.
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

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Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Tightly sealed goggles
Use suitable respiratory protective device only when aerosol or mist is formed.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
Protective work clothing

· ***Environmental protection measures***
· ***Water***
Do not allow to reach sewage system. Dispose of this product and its container at hazardous or special waste collection point.
· ***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 calculated value is smaller than the DNEL.
The exposure estimation was carried out in accordance with ECETOC TRA.
· ***Worker (inhalation)***
The exposure estimation was carried out in accordance with ECETOC TRA.
The calculated value is smaller than the DNEL.
· ***Environment***
The calculated value is smaller than the PNEC.
The estimation of environmental exposure was carried out in accordance with EUSES.
· ***Guidance for downstream users***
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.