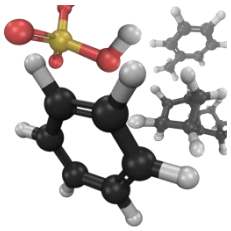


SAFETY DATA SHEET
TOLUENE

SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1. Product identifier

Substance name:	TOLUENE
Product name:	TOLUENE
Index No:	601-021-00-3
EINECS:	203-625-9
CAS number:	108-88-3
CAS name:	Toluene
IUPAC name:	methylbenzene
REACH registration number:	01-2119471310-51-0024
Type of substance:	Composition: mono constituent substance Origin: organic

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

1.2.1. Relevant identified uses

Toluene is used as a feedstock for a number of chemical syntheses (production of TDA, TDI, DNT, TNT, benzene, xylenes), as a of solvents in paint and lacquer industry and as an octane enhancing component of gasoline.
See section 16 for list of descriptors combination.

1.2.2. Uses advised against

According to Annex XVII of REACH regulation toluene shall not be placed on the market, or used, as a substance or in mixtures in a concentration equal to or greater than 0,1% by weight where the substance or mixture is used in adhesives or spray paints intended for supply to the general public.

1.3. Details of the supplier of the safety data sheet

Company identification: Petrochemia – Blachownia Sp. z o.o.
Szkolna 15
47-225 Kędzierzyn - Koźle
POLAND
Phone: +48 77 488 68 01 (Mo. – Frid.; 7^{00} – 15^{00})
Fax. +48 77 488 67 21
E-mail of responsible person for SDS: reach@petrochemia-bl.com.pl

1.4. Emergency telephone number

Department of Chemical Safety
Nofer Institute of Occupational Medicine, Łódź, Poland
+48 42 631 47 67
+48 42 657 99 00
working days Mo. – Fri. 8^{00} - 15^{00}

Company's Emergency phone number (round the clock): +48 697 986 566

Emergency services: general emergency number: 112
fire brigade: 998
emergency medical service: 999

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance

PHYSICAL / CHEMICAL HAZARDS

Flammability — Flammable Liquid Cat 2; H225 Highly flammable liquid and vapour

HEALTH HAZARDS

Reproductive toxicity:	Repr. Cat. 2; H361d Suspected of damaging the unborn child
Single toxicity	STOT Single Exp. Cat 3; H336 May cause drowsiness and dizziness; affects central nervous system (route of exposure: inhalation)
Repeat toxicity	STOT Rep. Exp. Cat 2; H 373 May cause damage to central nervous system through prolonged or repeat exposure
Aspiration toxicity	Asp. Tox. Cat. 1; H304 May be fatal if swallowed and enters airways
Skin irritation	Skin Irrit. Cat. 2; H315 Causes skin irritation

ENVIRONMENTAL HAZARDS

Not sufficient for classification.

2.2 Label elements

Product identifier:	TOLUENE
Substance:	Toluene
Index No:	601-021-00-3

Hazard pictograms:

GHS02

GHS08

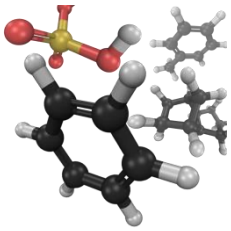
GHS07

Signal word:

Danger

Hazard statements:

H225 Highly flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H336 May cause drowsiness and dizziness; affects central nervous system (route of exposure: inhalation).
H361 Suspected of damaging the unborn child.
H373 May cause damage to central nervous system through prolonged or repeat exposure



Precautionary statements:

P202	Do not handle until all safety precautions have been read and understood
P210	Keep away from heat / sparks / open flames / ... / hot surface…No smoking.
P243	Take precautionary measures against static discharge.
P260	Do not breath mist / vapours / spray.
P280	Wear protective gloves / protective clothing / eye protection / face protection.
P303+P361+P353	IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothing. Rinse skin with water / shower.
P301+P310	IF SWALLOWED: Immediately call a PIOSON CENTER or doctor / physician.
P331	Do NOT induce vomiting.
P308+P313	IF exposed or concerned: Get medical advice / attention.

2.3 Other hazards

Substance do not meet the specific criteria for persistent and bioaccumulative and toxic (PBT) or the criteria for very persistent and very bioaccumulative (vPvB) detailed in Annex XIII of regulation 1907/2006/EC as indicate that the substance would not have these properties and the substance is not considered a PBT/vPvB.

The substance is not included in the list established in accordance with Article 59(1) of regulation 1907/2006 for having endocrine disrupting properties.

The substance is not a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Toluene

CAS number:	108-88-3
EC number(EINECS):	203-625-9
Index number:	601-021-00-3
IUPAC name:	methylbenzene
Degree of purity:	min. 99 %

SECTION4: FIRST AID MEASURES

4.1. Description of first aid measures

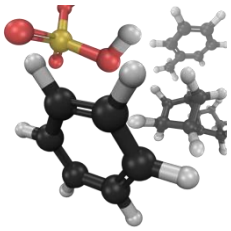
4.1.1. General advice

Take care to self-protect by avoiding becoming contaminated.

In case of health troubles or doubts, seek medical advice immediately and show this Material Safety Data Sheet. Ensure activity of vitally important functions until the arrival of the doctor (artificial respiration, inhalation of oxygen, heart massage). If patient is unconscious, or in case of danger of blackout (apsychia), transport patient in a stabilised position. In case of first degree burns (painful redness), and second degree burns (painful blisters), cool the affected area with cold running water for a long time. In case of third degree burns (redness, cracking).

4.1.2. Inhalation

Move to fresh air. Do not leave the victim unattended. Keep patient warm and at rest. Seek immediate medical attention. If breathing is difficult, give oxygen if possible or assisted ventilation, (do not use mouth to mouth). If unconscious place in recovery position. In the event of cardiac arrest, (no pulse), apply cardiopulmonary resuscitation.



4.1.3. Skin contact

Take off all contaminated clothing and shoes. Immediately flush affected area with plenty of soap and water – continue for at least 15 minutes. If there are signs of irritation or other symptoms seek medical attention.

4.1.4. Eye contact

Remove any contact lenses. Flush eyes with water thoroughly and continuously for at least 15 minutes. Keep eye wide open while rinsing. Protect unharmed eye. If there are signs of irritation or other symptoms seek medical attention. If eye irritation, pain, swelling, lachrimation or photophobia persists, the patient should be seen in a specialist health care facility.

4.1.5. Ingestion

Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting, if vomiting does occur, have victim lean forward to reduce risk of aspiration. Get medical attention immediately. Do not give milk or alcoholic beverages.

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

Acute inhalation toxicity: High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and / or death.
Skin Irritation: Pain and redness of the skin.
Eye irritation(slightly irritating): Pain and watery eyes, redness of the conjunctiva
Respiratory irritation: Inhalation of vapours, mists or aerosol may cause irritation to respiratory system.
Sensitisation: Not expected to be a skin sensitizer.
Repeated dose toxicity: repeated exposure affects the nervous system; effects were seen at high dose only.
Reproductive and developmental toxicity: cause feototoxicity in animals at doses which are maternally toxic. Does not impair fertility.
Visual system: may cause decreased colour perception. These subtle changes have not been found to lead to functional colour vision deficits.
Auditory system: prolonged and repeated exposure to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss.
Other information: Exposure to very high concentrations of toluene and similar materials has been associated with irregular heart rhythms and cardiac arrest. Abuse of vapours has been associated with organ damage and death.

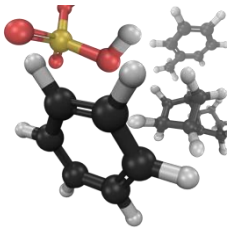
4.3. Indication of any immediate medical attention and special treatment needed

Causes irritation to the skin. This irritation can result in redness and swelling of the skin. Slightly irritating to eyes. This irritation can result in redness and swelling of the eyes. Repeated contact with the skin may cause it to become dry and cracked. If inhalation occurs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath and may cause transient central nervous system (CNS) depression. In case of ingestion, Ipecac-induced emesis is not recommended. Consider use of charcoal as a slurry (240mL water/30 g charcoal). Usual dose: 25 to 100 g in adults If determined necessary (and under qualified medical supervision), the stomach should be emptied by gastric lavage under qualified medical supervision with the airway protected by endotracheal intubation.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

LARGE FIRE: Use water spray, water fog or foam. DO NOT use direct water jet.



SMALL FIRE: Dry powder or carbon dioxide (CO2) extinguisher, dry sand or fire fighting foam. Use water spray to cool fire-exposed containers and to reduce rate of burning, taking care not to spread the fire

5.2. Special hazards arising from the substance

Carbon oxides (CO, CO_2), toluene vapours can be released in case of fire.
Vapour is denser than air – flashback may be possible over considerable distances. Containers may explode under fire conditions - use water spray to cool unopened containers. Do not allow run-off from firefighting to enter drains or water courses – may cause explosion hazard in drains and may reignite on surface water.

5.3. Advice for fire-fighters

Special protective equipment: Wear self-contained breathing apparatus in addition to standard firefighting gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Caution: an area threatened with explosion. Isolate hazard area. Evacuate all unauthorised personnel not participating in rescue operations from the area. Avoid entry into danger area. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition. Stop traffic and switch off the motors of the engines. Do not smoke and do not handle with naked flame. Use explosion-proof lamps and non-sparking tools. Avoid contact with the substance and its vapours. Apply recommended full protective personal equipment to paralyse the accident. When escaping from the contaminated area, wear mask with cartridge A against organic vapours. In case of general average, evacuate personnel from danger area. In places under the ground level and in enclosed spaces (including drains) risk of explosion. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog spray. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Ventilate contaminated area thoroughly.

6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protective equipment. Avoid breathing vapours, mist or aerosol. Ensure adequate ventilation and absence of sources of ignition. Beware of accumulation of vapours in low areas or contained areas, where explosive concentrations may occur.

6.1.1. For non-emergency personnel

Use appropriate personal protection measures as described in section 8 of the safety data sheet. Follow the instructions of the people giving help / evacuation.

6.1.2. For emergency responders

Use appropriate personal protection measures as described in section 8 of the safety data sheet. Remove the injured from the danger zone; inform appropriate services, provide first aid in accordance with the guidelines contained in section 4 of the safety data sheet.

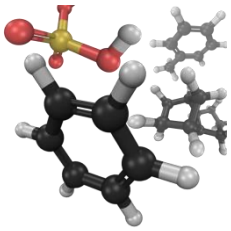
6.2. Environmental precautions

Land spillage

Prevent further leakage or spillage if safe to do so. Prevent spillage from entering drains.

Spillages in water or at sea

Prevent further leakage or spillage if safe to do so. If the spillage contaminates rivers, lakes or drains inform respective authorities. In case of drinking water contamination alert users.



6.3. Methods and material for containment and cleaning up

Contain spillage. Small spillages can be taken up by collection with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and placed in container for disposal according to local / national regulations. For larger spillages on water contain with booms or barriers, use surface acting agents to thicken spilled materials. Remove trapped material with suction hoses.
Spillages of liquid product will create a fire hazard and form an explosive atmosphere. Ensure all equipment is non sparking or electrically bonded. Avoid direct contact with released material. Stay upwind. Keep non-involved personnel away from the area of spillage. Ensure adequate ventilation, especially in confined areas.

6.4. Reference to other sections

Fire-fighting measures - see section 5; waste management - see section 13 of the charter; personal protection equipment - see section 8 of the SDS; emergency telephone numbers - see section 1.4.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Smoking, eating and drinking should be prohibited. Use only in well ventilated areas. Avoid all sources of ignition. Take precautionary measures against static discharges. Avoid contact with heat and ignition sources and oxidizing agents. Containers should be opened only under exhaust ventilation hood. Do not allow splash filling of bulk volumes. Do not use compressed air for filling, discharging or handling. Cleaning, inspection and maintenance of the internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations. Handle empty containers with care; vapour residue may be flammable. Do not pressurise, cut, weld, braze, solder, drill, or grind on containers. Dispose of rinse water in accordance with local and national regulations. The vapour is heavier than air, beware of accumulation in pits and confined spaces. The product will float on water and can be reignited on surface water. Ensure that all relevant regulations regarding explosive atmospheres, and handling and storage facilities of flammable products are followed. Electrostatic charges may be generated during pumping. Electrostatic charges may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. In order to avoid generation of electrostatic discharge restrict line velocity during pumping into storage tanks and / or tankers (≤1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec). Avoid splash filling. Do NOT use compressed air filling, discharging or handling operations.

7.2. Conditions for safe storage, including any incompatibilities

Toluene should be stored in either mild steel or stainless steel containers or vessels. No smoking. Store in a designated cool and well-ventilated place. Store in the original, tightly closed, container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep container tightly closed and properly labelled. Vapour space above stored liquid may be flammable/explosive unless blanketed with inert gas. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills.

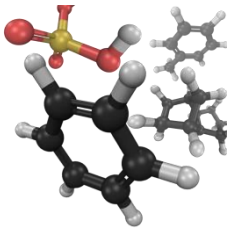
7.3. Specific end use(s)

See in exposure scenarios in Annexes.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Significant routes of exposure:

Human exposure: vapours by inhalation; liquid by skin
Environmental exposure: air
Pattern of exposure: accidental/infrequent



8.1. Control parameters

Exposure limits

	Toluene
TWA; mg/m³	*192*
STEL; mg/m³	*384*
Notation	*skin*

A skin notation assigned to the occupational exposure limit value indicates the possibility of significant uptake through the skin.
According to Commission Directive 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC.

Exposure controls in accordance with local and national regulations.

DNEL: Derived No Effect Level (long-term based on local effect)

Workers

Acute - systemic effect (inhalation)	384 mg/m³
Acute – local effect (inhalation)	384 mg/m³
Long-term - systemic effects (dermal)	384 mg/kg bw /day
Long-term - systemic effects (inhalation)	192 mg/m³ (neurotoxicity)
Long-term - local effects (inhalation)	192 mg/m³ {irritation (respiratory track)}

General population

Acute - systemic effect (inhalation)	226 mg/m³
Acute – local effect (inhalation)	226 mg/m³
Long-term - systemic effects (dermal)	226 mg/kg bw /day
Long-term - systemic effects (inhalation)	56,5 mg/m³
Long-term - systemic effects (oral)	8,13mg/kg bw /day

PNEC: Predicted No Effect Concentration

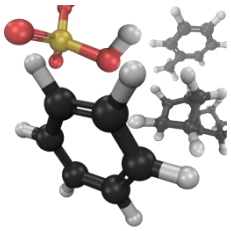
Aqua – freshwater	0,68 mg/l
Aqua - marine water	0,68 mg/l
Aqua - intermittent releases	0,68 mg/l
Sediment	16,39 mg/kg d.w.
Sediment (marine water)	16,39 mg/kg d.w.
Soil	2,89mg/kg.w.
Sewage Treatment Plant	13,61 mg/l

8.2. Exposure controls

The substance should be rigorously contained by technical means during its whole lifecycle; procedural and control technologies are used to minimise emissions and any resulting exposures; only properly trained and authorised personnel handle the substance; special procedures such as purging and washing should be applied during cleaning and maintenance works, in cases of accident and where waste is generated, procedural and/or control technologies should be used to minimise emissions and the resulting exposures; and substance-handling procedures should be well documented and strictly supervised by the site operator.

8.2.1. Appropriate engineering controls

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on risk assessment of local circumstances.



Appropriate measures include: Use sealed systems as far as possible. Adequate explosion-proof ventilation to local airborne concentrations below the exposure guidelines / limits. Firewater monitors and deluge systems is recommended.

8.2.2. Personal protective equipment

Consider the potential hazards of this material applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment.

If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended

Respiratory protection: gas-mask with A type absorber against organic vapours. The absorber should be selected depending on toluene volumetric concentration: up. to 0,1% vol. – A1, 0,1 – 0,5 % vol. – A2; 0,5 – 1% vol. – A3.

When mixture of vapours of different substances may occure use universal ABEK absorber.

When concentration of compound is higher than 1% of volume or there is oxygen lack in air (below 17%) use self-contained breathing apparatus.

In case of emergency or when substance concentration isn't known use personal protective equipment in highest class of protection.

Hand protection: protective gloves

Eye protection: protective glasses ; when liquid spatter is possible use a protective mask.

Skin and body protection: protective clothing; protective shoes

In areas with explosion possibility use anti-electrostatic clothing, gloves and shoes.

8.2.3. General safety and hygiene measures

Do not breath vapours / mist / spray. Keep away from drink, food and animal feeding stuffs. No eating, drinking, smoking or tobacco use at the place of work. Take off immediately all contaminated clothing. Hands and face should be washed before breaks and at the end of shift. At the end of the shift the skin should be cleaned and skin-care agents applied.

8.2.4. Environmental exposure controls

Toluene does not dilute in water, is lighter than water and accumulates on its surface. It is dangerous for surface water and outer soil layers

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

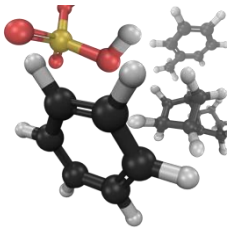
Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

GENERAL INFORMATION

Physical State:	Liquid
Colour:	Colourless
Odour:	Characteristic for aromatic compounds
Odour Threshold:	8 mg/m^3

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15.6 °C):	0,866 g/cm^3
Flash Point:	4,4°C
Explosion limits	lower 1,1%
	upper 7,1 %



Autoignition Temperature:	480°C
Boiling Point / Range:	110,6°C
Vapour Density (Air = 1):	Not available
Vapour Pressure:	3,089kPa at 21,1˚C and 4,13kPa at 26,6˚C
Evaporation Rate (N-Butyl Acetate = 1):	not available
Log Pow (n-Octanol/Water Partition Coefficient):	2,73
Solubility in Water:	573-587 mg/l at 23,5˚C
Viscosity:	0,56 mPa s at 25°C
Oxidising properties:	not applicable

9.2. Other information

Melting point:	(-)95°C
Molecular Weight:	92,14 g/mol

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Danger of violent reaction and explosion in fire environment.

10.2. Chemical stability

In normal conditions -stable

10.3. Possibility of hazardous reactions

Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide (CAS 630-08-0), carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

10.4. Conditions to avoid

Avoid high temperatures, heat, sparks, open flames and other ignition sources. Static discharges. Prevent vapour accumulation. Tanks exposed to long effect of high temperatures may explode and cause fire

10.5. Incompatible materials

Strong oxidising agents, mixture of sulphuric acid and nitric acid, tertoxide dinitrate, bromine trifluoride uranium, hexafluoride .

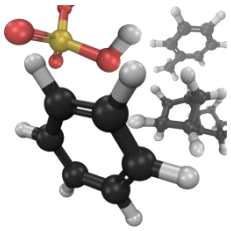
10.6. Hazardous decomposition products

No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazards classes as defined in Regulation (EC) No 1272/2008

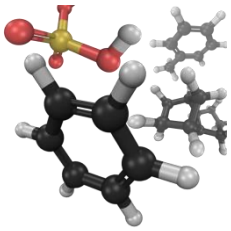
	Conclusion / Remarks
Acute toxicity	
By oral route	Low acute toxicity (LD50>5000 mg/kg bw)
By inhalation	Low acute toxicity (LC50 188 mg/L)
By dermal route	Low acute toxicity (LD50>5000 mg/kg bw)



Skin corrosion / irritation	
Assessment of available human and animal data,	Irritating
Assessment of the acid or alkaline reserve In vitro studies	Not justified
In vivo skin irritation	Irritating
Serious eye damage / irritation	
Assessment of available human and animal data,	Slightly irritating but not to an extent that warrants classification
Assessment of the acid or alkaline reserve In vitro study	Not justified
In vivo eye irritation	Slightly irritating but not to an extent that warrants classification
Respiratory or skin sensitisation	
Assessment of available human , animal and alternative data	Not sensitising
In vivo study	Not sensitising
Germ cell mutagenicity	
In vitro studies In vivo studies	Not genotoxic
Carcinogenicity	No carcinogenic effect
Reproductive toxicity	
Fertility ***Pre-natal developmental tox study***	No evidence of reproductive effects. There is some evidence of developmental toxicity (lower body weight at birth and delayed vaginal opening) at toluene exposure concentrations ≥ 1000 ppm, concentrations which are associated with slight maternal toxicity. The NOAEC for developmental and maternal effects is 600 ppm (2261 mg/m3)
STOT – single exposure	May cause drowsiness and dizziness; affects central nervous system (route of exposure: inhalation)
STOT- repeated exposure	
Short term and sub-chronic toxicity	Inhalation: After repeated dose exposure, toluene causes a number of adverse effects including neuropsychological effects, auditory dysfunction and effects on colour vision
Aspiration toxicity	
By oral route	May be fatal if swallowed and enters airways
By inhalation	

11.2. Information on other hazards

	Conclusion / Remarks
Endocrine disrupting properties	The substance is not included in the list established in accordance with Article 59(1) of regulation 1907/2006 for having endocrine disrupting properties. The substance is not a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.
Toxicokinetics	Low absorption following inhalation
Chronic/Other Effects	Aspiration hazard - - kinematic viscosity below 20,5 mm2/s at 40 °C. May cause drowsiness or dizziness. Experimental exposure of human volunteers show that dizziness and sleepiness are experienced at air levels < 20 mg/L for 4h.



SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

	Conclusion / Remarks
Aquatic toxicity:	
Short term toxicity testing on invertebrates (Daphnia)	48hr EC50 3,78 mg/l
Long term toxicity testing on invertebrates (Daphnia)	7 day NOEC 0,74 mg/l
Growth inhibition study aquatic plants	72hr NOEC 10 mg/l
Short term toxicity testing on fish	96hr LC50 5,5 mg/l
Long term toxicity testing on fish	40 day NOEC 1,4 mg/l
Activated sludge respiration inhibition testing	24hr EC50 84 mg/l
Long term toxicity to sediment organisms	Not available
Terrestrial toxicity	
Long term toxicity to invertebrates:	Not available
Effects on soil microorganism:	Not available
Long-term toxicity to plant:	Not available
Long-term or reproductive toxicity to birds:	Not available

12.2. Persistence and degradability

Biodegradation*:* Toluene is readily biodegradable
Hydrolysis *(as a function of pH) :* Toluene will not undergo hydrolysis
Photolysis: Toluene will not undergo photolysis
Atmospheric Oxidation: Toluene is expected to degrade by indirect photolysis in air.

12.3. Bioaccumulative potential

Based on a log Kow <3 toluene has low potential for bioaccumulation.

12.4. Mobility in soil

Based on a log Kow <3 toluene is not expected to adsorb to soil or sediment.

12.5. Results of PBT and vPvB assessment

Does not meet criteria

12.6. Endocrine disrupting properties

The substance is not included in the list established in accordance with Article 59(1) of regulation 1907/2006 for having endocrine disrupting properties.
The substance is not a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

12.7. Other adverse effects

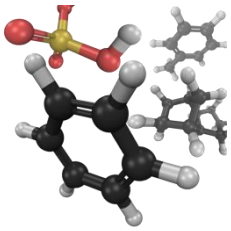
It is not expected that toluene as an effect on global warming, ozone depletion in the stratosphere or ozone formation in the troposphere.

SECTION 13: DISPOSAL CONSIDERATIONS

Wastes classification : according to Waste Catalogue.

13.1. Waste treatment methods

Do not let the product get into the sewage systems and soil waters. Do not store on municipal landfills. Consider possibility of use. Carry on the recovery or disposal of wastes in accordance to law regulations. Recommended way of disposal: incineration.



Disposable packaging provide to an authorized recipient. Carry on the recovery or disposal of wastes in accordance to law regulations.
Reusable packaging after careful cleaning can be reused if necessary.

SECTION 14: TRANSPORT INFORMATION

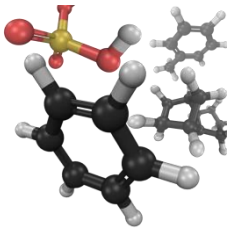
Subsection	Road transport (ADR)	Railway transport (RID)
14.1. ***UN numer or ID nimber***	UN 1294	UN 1294
14.2. Proper shipping name	TOLUENE	TOLUENE
14.3. Transport hazard class(es)	3	3
14.4. Packing group	II	II
14.5. Environmental hazards	no	no
14.6. Special precautions for users	Excepted quantities: LQ4 Packing instructions: P001, IBC02, R001	Excepted quantities: LQ4 Packing instructions: P001, DPPL02, R001
14.7. Marine transport in bulk according to IMO instruments	-	-

SECTION 15: REGULATORY INFORMATION

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

15.1.1. Information regarding relevant Community safety, health and environmental provisions
The group of flammable liquids is found in Annex I of Directive 2012/18/EC (Seveso III). Qualifying quantity (tonnes) for dangerous substance for the application of:
Lower-tier: 5.000 tonnes
Upper-tier: 50.000 tonnes
Toluene is classified as drug precursor cat. 3 according to Regulation (EC) No 273/2004 concerning drug precursors.

15.1.2. EU regulations
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/105/EC and 2000/21/EC
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
- Directive No 2012/18/EC of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC.
- Regulation (EC) No 273/2004 of the European Parliament and of the Council of 11 February 2004 on drug precursors.
- Directive No 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work (sixth individual directive within the meaning of Article 16(1) of Directive 89/391/EEC).
- Council Directive No 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteen individual directive within the meaning of Article 16(1) of Directive 89/391/EEC).



- Commission Directive No 2000/39/EC of 8 June 2000 establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC.
- Commission Directive No 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending of Directive 2000/39/EC.
- Commission Directive No 2009/161/EU of 17 December 2009 establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending of Directive 2000/39/EC
- Commission Directive (EU) 2017/164 of 31 January 2017 establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
- Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
- Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste
- Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods.
- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).
- Regulations concerning the International Carriage of Dangerous Goods by Rail (RID).
- Regulation (EC) No 273/2004 of the European Parliament and of the Council of 11 February 2004 on drug precursors.
- Commission Delegated Regulation (EU) 2017/2100 of 4 September 2017 setting out scientific criteria for the determination of endocrine-disrupting properties pursuant to Regulation (EU) No 528/2012 of the European Parliament and Council.
- Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products

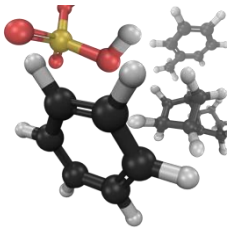
15.2. Chemical Safety Assessment

Chemical Safety Report has been carried out.

SECTION 16: OTHER INFORMATION

16.1. Indication of changes

This version replaces version 2.1 of 15.08.2020.
Adaptation of the card to the new format in accordance with Commission Regulation (EU) 2020/878 of June 18, 2020. amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).
Section 1.4. - Update of emergency numbers.
Section 2.3. - Information on endocrine disrupting properties has been added.
Section 6.1. - Information on personal precautions and emergency procedures has been clarified.
Section 8.1. - The methods of exposure assessment have been specified and the legal basis has been given.
Section 11 - Updated information on toxicological hazards in terms of endocrine disrupting properties.
Section 12 - Supplemented information on ecological hazards in terms of endocrine disrupting properties



16.2. Abbreviations and acronyms

EC50	Half maximal effective concentration
LC50	Lethal concentration, 50 %
NOAEC / NOAEC	No Observed Adverse Effect Level / Concentration
NOEL / NOEC	No Observed Effect Level / Concentration
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
DNEL	Derived No Effect Level (long-term based on local effect)
PNEC	Predicted No Effect Concentration

16.3. Key literature references and sources for data

Registration dossier for toluene.

16.4. Advice on any training for workers

To ensure protection of human health and the environment all workers involve in toluene handling should be appropriately trained. Trainings should include physical and chemical properties of the substance, effects for human health and on environment as well as way of protection (including personal protective equipment) and first aid measurements. Trainings should include accident / emergency simulations and should be periodically repeat.

16.5. Further information

This SDS is prepared for the purpose of providing health, safety and environmental data. The information given corresponds with our actual knowledge and experience. While the descriptions, data and information contained in the present datasheet are provided in good faith, these are to be considered as guidance only. Thus, this SDS shall not constitute a guarantee for any specific properties or quality standards.

This information is meant to describe our product in view of possible safety requirements, but it remains the responsibility of the customer to determine the applicability of the information and suitability of any product for its own particular purpose, to provide a safe workplace and comply with all applicable laws and regulations.

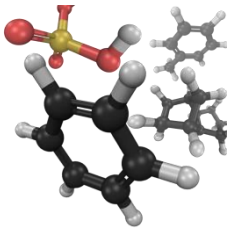
Since handling, storage, use and disposal is of the product are beyond our control and our knowledge, we do exclude any responsibility connecting to handling, storage, use or disposal of this product.

Please note that if the product used as a component of another product, this SDS information may not be applicable.

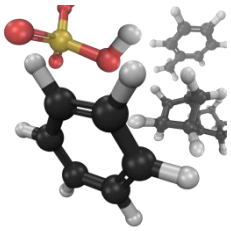
16.5.1. Identified uses

Uses by workers in industrial settings

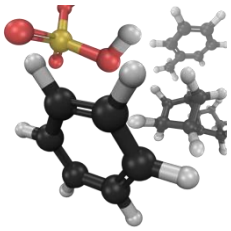
Identified Use Name	**Use descriptors**
Manufacture	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as laboratory reagent ***Environmental release category (ERC):***



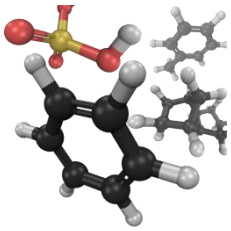
	ERC1: Manufacture of substances ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ***Sector of end use (SU):*** SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR:*** 1
Use as an intermediate	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers dedicated filling line, including weighing) PROC15: Use as laboratory reagent ***Environmental release category (ERC):*** ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ***Sector of end use (SU):*** SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR***: 3
Use in cleaning agents	***Process category (PROC):*** PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring ***Environmental release category (ERC):*** ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ***Sector of end use (SU):*** SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR:*** 5
Use as a fuel	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises



	PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC16: Using material as fuel sources, limited exposure to unburned product to be expected ***Environmental release category (ERC):*** ERC7: Industrial use of substances in closed systems ***Sector of end use (SU):*** SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR***: 7
Use in coatings	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent ***Environmental release category (ERC):*** ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ***Sector of end use (SU):*** SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR:*** 10
Use in binders and release agents	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC6: Calendering operations PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation ***Environmental release category (ERC):*** ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ***Sector of end use (SU):***



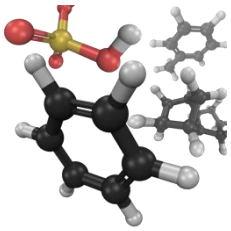
	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR:*** 14
Use as a laboratory reagent	***Process category (PROC):*** PROC10: Roller application or brushing PROC15: Use as laboratory reagent ***Environmental release category (ERC):*** ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ***Sector of end use (SU):*** SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR***: 16
Use in functional fluids	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) ***Environmental release category (ERC):*** ERC7: Industrial use of substances in closed systems ***Sector of end use (SU):*** SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR***: 18
Use in rubber production and processing	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles PROC6: Calendering operations PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC21: Low energy manipulation of substances bound in materials and/or articles ***Environmental release category (ERC):***



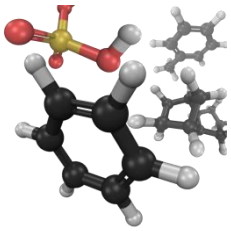
	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers ***Sector of end use (SU):*** SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR:*** 20
Formulation	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent ***Environmental release category (ERC):*** ERC2: Formulation of preparations ***Sector of end use (SU):*** SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU3: Industrial uses: Uses of substance at industrial sites ***Exposure scenario reference in the CSR:*** 21

Uses by workers in professional settings {(SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)}

Identified Use name	**Use descriptors**
Use in roads and construction	***Process category (PROC):*** PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring ***Environmental release category (ERC):*** ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix ***Sector of end use (SU):*** 22 ***Exposure scenario reference in the CSR:*** 4



Use in cleaning agents	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring ***Environmental release category (ERC):*** ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ***Sector of end use (SU):*** 22 ***Exposure scenario reference in the CSR***: 6
Use in coatings	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available. ***Environmental release category (ERC):*** ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ***Sector of end use (SU):*** 22 ***Exposure scenario reference in the CSR:*** 11
Use in binders and release agents	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation ***Environmental release category (ERC):*** ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems



	Sector of end use (SU): 22 ***Exposure scenario reference in the CSR:*** 15
Use in laboratory reagents	***Process category (PROC):*** PROC10: Roller application or brushing PROC15: Use as laboratory reagent ***Environmental release category (ERC):*** ERC8a: Wide dispersive indoor use of processing aids in open systems ***Sector of end use (SU):*** 22 ***Exposure scenario reference in the CSR***: 17
Use in functional fluids	***Process category (PROC):*** PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems ***Environmental release category (ERC):*** ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems ***Sector of end use (SU):*** 22 ***Exposure scenario reference in the CSR:*** 19

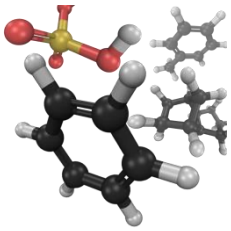
Uses by consumers {(SU21: Consumer uses: Private households (= general public = consumers)}

Identified Use name	Use descriptors
Use in coatings	***Chemical product category (PC):*** PC1: Adhesives, sealants PC4: Anti-freeze and de-icing products PC8: Biocidal products (e.g. disinfectants, pest control) PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC9c: Finger paints PC14: Metal surface treatment products, including galvanic and electroplating products PC15: Non-metal-surface treatment products PC17: Hydraulic fluids PC18: Ink and toners PC21: laboratory chemicals PC23: Leather tanning, dye, finishing, impregnation and care products PC24: Lubricants, greases, release products PC31: Polishes and wax blends PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids PC35: Washing and cleaning products (including solvent based products) ***Environmental release category (ERC):*** ERC9a: Wide dispersive indoor use of substance in closed systems ERC9b: Wide dispersive outdoor use substance in closed systems ***Sector of end use (SU):*** 21 ***Exposure scenario reference in the CSR:*** 12

Annexes: Exposure scenarios

Annex 1 Exposure scenario 1:Manufacture (industrial)

Annex 2 Exposure scenario 3: Use as intermediate



Annex 3	Exposure scenario 4: Use in road and construction (professional)
Annex 4	Exposure scenario 5: Use in cleaning agents (industrial)
Annex 5	Exposure scenario 6: Use as cleaning agents (professional)
Annex 6	Exposure scenario 7: Use as fuel (industrial)
Annex 7	Exposure scenario 10: Use in coatings (industrial)
Annex 8	Exposure scenario 11: Use in coatings (professional)
Annex 9	Exposure scenario 12: Use in coatings (consumers)
Annex 10	Exposure scenario 14: Use in binders and release agents (industrial)
Annex 11	Exposure scenario 15: Use in binders and release agents (professional)
Annex 12	Exposure scenario 16; Use as laboratory reagent (industrial)
Annex 13	Exposure scenario 17: Use as laboratory reagent (professional)
Annex 14	Exposure scenario 18: Use in functional fluids (industrial)
Annex 15	Exposure scenario 19: Use in functional fluids (professional)
Annex 16	Exposure scenario 20: Use in rubber production and processing (industrial)
Annex 17	Exposure scenario 21: Formulation (industrial)