SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
UK REACH Regulations (SI 2019/758 as amended)

Supercedes date 29-Jan-2025 **Revision date** 11-Sep-2025 **Revision Number** 6

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

1.1. Product identifier

Product Code(s)	370
Safety data sheet number	370
Product Name	TOLUENE
UK REACH registration number	01-8199965928-7-XXXX
Index No	601-021-00-3
EC Number	203-625-9
CAS No	108-88-3
Synonyms	PHENYL METHANE, TOLUOL, METHYL BENZENE, MX-THINNER A 214, MX-THINNER 3, TOLUENE (ESSAR), TOLUENE R14, TOLUENE STATOIL, TOLUENE - TRBG, TOLUENE O&G, TOLUENE PH
Pure substance/mixture	Substance

Contains TOLUENE

Formula	C7H8
Molecular weight	92.14

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

Recommended use

Manufacture of substance
Formulation & (re)packing of substances and mixtures.
Coatings
Cleaning agent
Oil field drilling and production operations
Binding agent
Releasing agent
Functional fluids
Use in laboratories
Rubber products
Additive for Agrochemicals
Fuels
road and construction products.
Polymers
Use in explosives
Inks
Adhesives
Chemical intermediate
Solvent
Laboratory chemicals
Industrial use
Professional use
Consumer use

For further information, see attached Exposure Scenario

1.3. Details of the supplier of the safety data sheet

Supplier
Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
GBR

For further information, please contact

E-mail address SDS.EMEA@univarsolutions.com

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

1.4. Emergency telephone number

Emergency Telephone SGS - +32 (0)3 575 55 55 (24h)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Flammable liquids	Category 2 - (H225)
Skin corrosion/irritation	Category 2 - (H315)
Reproductive toxicity	Category 2 - (H361)
Specific target organ toxicity — single exposure	Category 3 - (H336)
Category 3 Narcotic effects	
Specific target organ toxicity — repeated exposure	Category 2 - (H373)
Aspiration hazard	Category 1 - (H304)
Chronic aquatic toxicity	Category 3 - (H412)

2.2. Label elements

Contains TOLUENE

Signal word
Danger

Hazard statements
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H336 - May cause drowsiness or dizziness
H361d - Suspected of damaging the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure
H412 - Harmful to aquatic life with long lasting effects
H225 - Highly flammable liquid and vapour

Precautionary statements
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P260 - Do not breathe dust/fume/gas/mist/vapours/spray
P280 - Wear protective gloves/protective clothing/eye protection/face protection

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor
P331 - Do NOT induce vomiting
P370 + P378 - In case of fire: Use dry chemical, CO2, water spray or alcohol-resistant foam to extinguish

Additional information
This product requires child resistant fastenings if supplied to the general public. This product requires tactile warnings if supplied to the general public.

2.3. Other hazards

No information available.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Weight-%	EC No (EU Index No)	UK REACH registration number	Classification according to GB CLP (SI 2020/1567 as amended)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
TOLUENE 108-88-3	100 %	203-625-9 (601-021-00-3)	01-8199965928-7-XXXX	Flam. Liq. 2 (H225) Asp. Tox. 1 (H304) Skin Irrit. 2 (H315) STOT SE 3 (H336) STOT RE 2 (H373) Repr. 2 (H361d) Aquatic Chronic 3 (H412)	-	-	-

Full text of H- and EUH-phrases: see section 16

This product does not contain candidate substances of very high concern at a concentration >= 0.1% (UK REACH Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If breathing is irregular or stopped, administer artificial respiration. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Place unconscious person on the side in the recovery position and ensure breathing can take place. Get medical attention immediately if symptoms occur. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Remove to fresh air. Aspiration into lungs can produce severe lung damage. If breathing has stopped, give artificial respiration. Get medical attention immediately. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. If breathing is difficult, (trained personnel should) give oxygen. Get immediate medical attention. Delayed pulmonary edema may occur.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if symptoms occur. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.

Skin contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin

with water/shower. Continue to rinse for at least 10 minutes. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.

Ingestion

Get medical attention immediately if symptoms occur. Rinse mouth thoroughly with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Place unconscious person on the side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Get immediate medical attention.

Self-protection of the first aider

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Avoid contact with skin, eyes or clothing.

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

Symptoms

Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure. Difficulty in breathing. Coughing and/ or wheezing. Dizziness. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Inhalation

May cause drowsiness or dizziness. Overexposure may cause the following adverse effects. Antiemetic (Vomiting and Nausea). Headache. drowsiness/fatigue. dizziness/vertigo. Unconsciousness. reduced foetal weight. increase in foetal deaths. skeletal malformations. Coughing and/or wheezing. Difficulty in breathing. Dizziness. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Eyes

Overexposure may cause the following adverse effects. May cause redness and tearing of the eyes. Pain. Irritation.

Dermal

Causes skin irritation. Overexposure may cause the following adverse effects. Irritation. Redness. reduced foetal weight. increase in foetal deaths. skeletal malformations. Irritating. Erythema (skin redness). Prolonged contact may cause redness and irritation.

Ingestion

May be fatal if swallowed and enters airways Overexposure may cause the following adverse effects Antiemetic (Vomiting and Nausea) reduced foetal weight increase in foetal deaths skeletal malformations

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

Note to doctors

Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Because of the danger of aspiration, emesis or gastric lavage should not be used unless the risk is justified by the presence of additional toxic substances.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media	Dry chemical, CO2, alcohol-resistant foam or water spray. Dry chemical. Carbon dioxide (CO2). Water spray. Alcohol resistant foam.
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	Highly flammable liquid and vapour. When heated and in case of fire, toxic vapours/gases may be formed. Runoff to sewer may create fire or explosion hazard. Containers can burst violently when heated, due to excess pressure build-up. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Harmful to aquatic life with long lasting effects. Do not allow run-off from fire-fighting to enter drains or water courses. Risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Hazardous combustion products	Carbon oxides. Aldehydes. Hydrocarbons.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Ensure adequate ventilation. Use personal protection recommended in Section 8. Avoid contact with skin, eyes and inhalation of vapours. No action shall be taken involving any personal risk or without suitable training. Evacuate area. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Eliminate all ignition sources if safe to do so. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. In case of inadequate ventilation wear respiratory protection. Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.
Other information	Ventilate the area. Refer to protective measures listed in Sections 7 and 8.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions	Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

Methods for containment	Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapour suppressing foam may be used to reduce vapours. Dyke far ahead of spill to collect run-off water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Methods for cleaning up	Stop leak if possible without any risk. Move containers from fire area if you can do it without risk. Use non-sparking tools. Keep upwind. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Do not allow run-off from fire-fighting to enter drains or water courses. Take up mechanically, placing in

appropriate containers for disposal. Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labelled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Ensure adequate ventilation. Use personal protection recommended in Section 8. Avoid contact with skin, eyes and inhalation of vapours. Obtain special instructions before use. Pregnant women should not work with the product, if there is the least risk of exposure. Do not handle until all safety precautions have been read and understood. Do not swallow. Avoid release to the environment. In case of insufficient ventilation, wear suitable respiratory equipment. Keep container closed when not in use. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating and lighting equipment. Use non-sparking tools. Take precautionary measures against static discharges. Empty containers retain product residue and can be hazardous. Do not re-use container. Use personal protection equipment. Avoid breathing vapours or mists. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use with local exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Remove contaminated clothing and shoes. Take off contaminated clothing and wash it before reuse. In case of insufficient ventilation, wear suitable respiratory equipment.

General hygiene considerations Do not eat, drink or smoke when using the product. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas. Handle in accordance with good industrial hygiene and safety practice. Observe good chemical hygiene practices. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Store in a segregated and approved area. Protect from direct sunlight. See section 10 for more information. Store locked up. Eliminate all ignition sources if safe to do so. Store away from the following materials. Strong oxidising agents. Strong acids. Strong bases. Keep container tightly closed in a dry and well-ventilated place. Keep containers upright. Keep in properly labelled containers. Use appropriate containment to avoid environmental contamination. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labelled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Store locked up. Keep out of the reach of children. Store away from other materials.

7.3. Specific end use(s)

Specific use(s)
See section 1 for more information.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	United Kingdom
TOLUENE 108-88-3	TWA: 50 ppm TWA: 191 mg/m³ STEL: 100 ppm STEL: 384 mg/m³ Sk*

Biological occupational exposure limits This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
TOLUENE 108-88-3		384 mg/kg bw/day [4] [6]	192 mg/m³ [4] [6] 384 mg/m³ [4] [7] 192 mg/m³ [5] [6] 384 mg/m³ [5] [7]

[4] Systemic health effects.
[5] Local health effects.
[6] Long term.
[7] Short term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
TOLUENE 108-88-3	8.13 mg/kg bw/day [4] [6]		56.5 mg/m³ [4] [6] 226 mg/m³ [4] [7] 56.5 mg/m³ [5] [6] 226 mg/m³ [5] [7]

[4] Systemic health effects.
[5] Local health effects.
[6] Long term.
[7] Short term.

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
TOLUENE 108-88-3	0.68 mg/L	0.68 mg/L	0.68 mg/L		

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
TOLUENE 108-88-3	16.39 mg/kg sediment dw	16.39 mg/kg sediment dw	13.61 mg/L	2.89 mg/kg soil dw	

8.2. Exposure controls

Engineering controls No information available.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Use eye protection according to EN 166. Tight sealing safety goggles.

Hand protection Wear suitable gloves. Gloves must conform to standard EN 374. Wear suitable gloves. Impervious gloves.

Gloves			
Duration of contact	PPE - Glove material	Glove thickness	Break through time
Long term (repeated)	Fluorinated rubber	Any thickness	> 480 minutes
Long term (repeated)	Polyvinyl alcohol (PVA)	Any thickness	> 480 hours
Short term	Wear protective nitrile rubber gloves	> 0.55 mm	> 30 minutes

Skin and body protection Wear appropriate clothing to prevent reasonably probable skin contact. Chemical resistant apron. Antistatic footwear. Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots.

Respiratory protection Use appropriate respiratory protection.
Organic gases and vapours filter conforming to EN 14387. Filter type:. Type A. or. Filter type:. AX.

General hygiene considerations Do not eat, drink or smoke when using the product. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas. Handle in accordance with good industrial hygiene and safety practice. Observe good chemical hygiene practices. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Liquid
Colour	Colourless
Odour	Aromatic. Hydrocarbons.
Odour threshold	No information available

Property	**Values**	**Remarks • Method**
Melting point / freezing point	-95 °C	
Initial boiling point and boiling range	110 - 111 °C	
Flammability		No information available.
Flammability Limit in Air		
Upper flammability or explosive limits	7.1 %	
Lower flammability or explosive limits	1.1 %	
Flash point	4 - 4.3 °C	CC (closed cup). DIN EN ISO 2719.
Autoignition temperature	480 - 536 °C	
Decomposition temperature		No information available.
pH		Not applicable.
pH (as aqueous solution)		No information available.
Kinematic viscosity	< 20.5 mm²/s	@ 40 °C. DIN ISO 3104.
Dynamic viscosity	0.56 0.63 mPa s	@ 25 °C.
Water solubility	Insoluble in water 0.57 - 0.587 g/l @ 20 °C	
Solubility(ies)		No information available.

Partition coefficient	2.73	
Vapour pressure	3.0 - 3.5 kPa	
Relative density	0.867 - 0.873	@ 15.56 °C. ISO 12185.
Bulk density		No information available
Liquid Density	No information available	No information available
Relative vapour density	3.1	
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	Not considered to be explosive.	
Oxidising properties	Does not meet the criteria for classification as oxidising	

9.2. Other information

Molecular weight 92.14 2 (n-butyl acetate=1)

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No specific test data related to reactivity available for this product or its ingredients.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

10.4. Conditions to avoid

Conditions to avoid Keep away from open flames, hot surfaces and sources of ignition. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapour to accumulate in low or confined areas. Heat, flames and sparks.

10.5. Incompatible materials

Incompatible materials Strong oxidising agents. Strong acids. Strong bases. Strong acids. Strong bases. Strong oxidising agents.

10.6. Hazardous decomposition products

Hazardous decomposition products Carbon oxides. Aldehydes. Hydrocarbons.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on likely routes of exposure

Product Information

Inhalation May cause drowsiness or dizziness. Overexposure may cause the following adverse effects. Antiemetic (Vomiting and Nausea). Headache. drowsiness/fatigue. dizziness/vertigo. Unconsciousness. reduced foetal weight. increase in foetal deaths. skeletal malformations. May cause central nervous system depression. Specific test data for the substance or mixture is not available. Aspiration into lungs can produce severe lung damage. May cause pulmonary edema. Pulmonary edema can be fatal. May cause irritation of respiratory tract. May cause drowsiness or dizziness.

Eye contact Overexposure may cause the following adverse effects. May cause redness and tearing of the eyes. Pain. Irritation. Specific test data for the substance or mixture is not available. May cause irritation.

Skin contact Causes skin irritation. Overexposure may cause the following adverse effects. Irritation. Redness. reduced foetal weight. increase in foetal deaths. skeletal malformations. Repeated exposure may cause skin dryness or cracking. Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).

Ingestion May be fatal if swallowed and enters airways. Overexposure may cause the following adverse effects. Antiemetic (Vomiting and Nausea). reduced foetal weight. increase in foetal deaths. skeletal malformations. May cause central nervous system depression. Specific test data for the substance or mixture is not available. Potential for aspiration if swallowed. May cause lung damage if swallowed. Aspiration may cause pulmonary edema and pneumonitis. May be fatal if swallowed and enters airways. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure. Difficulty in breathing. Coughing and/ or wheezing. Dizziness. Redness. May cause redness and tearing of the eyes. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Acute toxicity

Numerical measures of toxicity

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
TOLUENE	> 5000 mg/kg (Rat)	12267 mg/kg (Rabbit)	25.7 mg/l (Rat) 4h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Causes skin irritation. Classification based on data available for ingredients. Causes skin irritation.

TOLUENE (108-88-3)

Method	Species	Exposure route	Effective dose	Exposure time	Results
					Causes skin irritation Dryness and/or cracking

Serious eye damage/eye irritation Based on available data the classification criteria are not met.

TOLUENE (108-88-3)

Method	Species	Exposure route	Effective dose	Exposure time	Results
					May cause slight eye irritation

Respiratory or skin sensitisation Based on available data the classification criteria are not met.

TOLUENE (108-88-3)

Method	Species	Exposure route	Results
	Guinea pig	Dermal	Not a skin sensitiser

Germ cell mutagenicity Based on available data the classification criteria are not met.

Component Information
TOLUENE (108-88-3)

Method	Species	Results
		Not mutagenic

Carcinogenicity Based on available data the classification criteria are not met.

Component Information
TOLUENE (108-88-3)

Method	Species	Results
		Did not cause cancer in laboratory animals.

Reproductive toxicity Suspected of damaging the unborn child. Contains a known or suspected reproductive toxin. Classification based on data available for ingredients. Suspected of damaging fertility or the unborn child.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as reproductive toxins.

Chemical name	United Kingdom
TOLUENE	Repr. 2

TOLUENE (108-88-3)

Method	Species	Results
		Suspected of damaging the unborn child.

STOT - single exposure May cause drowsiness or dizziness.

TOLUENE (108-88-3)

Method	Species	Exposure route	Effective dose	Exposure time	Results
					May cause drowsiness or dizziness Central nervous system

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

Component Information
TOLUENE (108-88-3)

Method	Species	Exposure route	Effective dose	Exposure time	Results
					May cause damage to organs through prolonged or repeated exposure In animals, effects have been reported on the following organs: Central nervous system Excessive exposure may cause neurologic signs and symptoms. Toluene has caused hearing loss in laboratory animals upon

					exposure to high concentrations. Intentional misuse by deliberately inhaling toluene may cause nervous system damage, hearing loss, liver and kidney effects and death.

Aspiration hazard May be fatal if swallowed and enters airways.

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity Harmful to aquatic life with long lasting effects. Harmful to aquatic life with long lasting effects.

TOLUENE (108-88-3)

Method	Species	Endpoint type	Effective dose	Exposure time	Results
OECD Test No. 203: Fish, Acute Toxicity Test	Oncorhynchus mykiss (rainbow trout)	LC50	5.8 mg/L	96 hours	
Acute toxicity	Oncorhynchus kisutch	LC50	5.5 mg/L	96 hours	
OECD Test No. 202: Daphnia sp., Acute Immobilisation Test	Daphnia magna	EC50	7 mg/L	24 hours	
Acute toxicity	Water flea Ceriodaphnia dubia	LC50	3.78 mg/L	48 hours	
Acute toxicity	Chlorella sp	EC50	134 mg/L	3 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test or Equivalent.	Skeletonema costatum	NOEC	10 mg/L	72 hours	
Bacteria toxicity	Nitrosomonas sp	EC50	84 mg/L	24 hours	
Chronic toxicity	Fish Oncorhynchus kisutch	NOEC	1.39 mg/L	40 days	
	Ceriodaphnia dubia	NOEC	0.74 mg/L	7 days	
	Daphnia magna	NOEC	2 mg/L	21 days	

12.2. Persistence and degradability

Persistence and degradability Readily biodegradable.

TOLUENE (108-88-3)

Method	Exposure time	Value	Results
OECD Test No. 301C: Ready Biodegradability: Modified MITI Test (I) (TG 301 C) or Equivalent.	14 days	Biodegradation 100 %	Readily biodegradable

12.3. Bioaccumulative potential

Bioaccumulation Not likely to bioaccumulate.

Bioconcentration factor (BCF) 90

Component Information

Chemical name	Partition coefficient
TOLUENE	2.73

12.4. Mobility in soil

Mobility in soil Insoluble.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB.

Chemical name	PBT and vPvB assessment
TOLUENE	The substance is not PBT / vPvB

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

SECTION 14: Transport information

IATA

14.1 UN number or ID number UN1294
14.2 UN proper shipping name TOLUENE
14.3 Transport hazard class(es) 3
14.4 Packing group II
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions None
ERG Code 3L

IMDG

14.1 UN number or ID number UN1294
14.2 UN proper shipping name TOLUENE
14.3 Transport hazard class(es) 3
14.4 Packing group II
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions None
EmS-No F-E, S-D
14.7 Maritime transport in bulk according to IMO instruments No information available

RID

14.1 UN number or ID number UN1294
14.2 UN proper shipping name TOLUENE
14.3 Transport hazard class(es) 3
14.4 Packing group II
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions None

Classification code F1

ADR

14.1 UN number or ID number	UN1294
14.2 UN proper shipping name	TOLUENE
14.3 Transport hazard class(es)	3
14.4 Packing group	II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
Classification code	F1
Tunnel restriction code	(D/E)

SECTION 15: Regulatory information

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

National regulations

Authorisations and/or restrictions on use:
This product contains one or more substances subject to restriction (UK REACH - Annex XVII).
This product does not contain substances subject to authorisation (UK REACH - Annex XIV).

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
TOLUENE - 108-88-3	Use restricted. See item 48.	-

Persistent Organic Pollutants
Not applicable

Export Notification requirements
Not applicable

Named dangerous substances per COMAH Regulations 2015 (as amended)
Not applicable

The Ozone-Depleting Substances Regulations 2015
Not applicable

The Biocidal Products Regulations 2001 (as amended)
Not applicable

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)
Not applicable

Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)
Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status
DSL/NDSL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECI	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	Contact supplier for inventory compliance status

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AIIC - Australian Inventory of Industrial Chemicals
NZIoC - New Zealand Inventory of Chemicals

15.2. Chemical safety assessment

Chemical Safety Report A Chemical Safety Assessment has been carried out for this substance

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3
H225 - Highly flammable liquid and vapour
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H336 - May cause drowsiness or dizziness
H361d - Suspected of damaging the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure
H412 - Harmful to aquatic life with long lasting effects

Legend
SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
+	Sensitisers		

Revision Note SDS sections updated 1

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
European Chemicals Agency (ECHA) (ECHA_API)
Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal

Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
National Institute of Technology and Evaluation (NITE)
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine’s PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Prepared By	Lisa Bland
Supercedes date	29-Jan-2025
Revision date	11-Sep-2025

This material safety data sheet complies with the requirements of UK REACH Regulations (SI 2019/758 as amended)
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Manufacture of substance
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	ERC1 - Manufacture of substances
Process category(ies)	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
Product Name	TOLUENE
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC1 - Manufacture of substances

Amounts used

Type	Annual site tonnage
Value	300000
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.005
Release fraction to wastewater from process (initial release prior to RMM)	0.0001
Release fraction to soil from process (initial release prior to RMM)	0.0001

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	40
Local marine water dilution factor	100

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 90%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	During manufacturing no waste of the substance is generated

Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond	Users are advised to consider national Occupational Exposure Limits or other equivalent

the REACH Chemical Safety Report	values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Process sampling
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers (open systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Operate activity away from sources of substance emission or release
Conditions and measures related to	If above technical/organizational control measures are not feasible, then adopt following

personal protection, hygiene and health evaluation	PPE Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Operate activity away from sources of substance emission or release
Conditions and measures related to personal protection, hygiene and health evaluation	If above technical/organizational control measures are not feasible, then adopt following PPE Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC1 - Manufacture of substances

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	4070000 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using

onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Distribution of substance
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	ERC1 - Manufacture of substances ERC2 - Formulation of preparations (mixtures)
Process category(ies)	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
Product Name	TOLUENE
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC1 - Manufacture of substances
- ERC2 - Formulation of preparations (mixtures)

Amounts used

Type	Annual site tonnage
Value	300000
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.0001
Release fraction to wastewater from process (initial release prior to RMM)	0.00001

Release fraction to soil from process (initial release prior to RMM)	0.00001

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 90%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Process sampling
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers (open systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Operate activity away from sources of substance emission or release
Conditions and measures related to personal protection, hygiene and health evaluation	If above technical/organizational control measures are not feasible, then adopt following PPE Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Drum and small package filling
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down and flush system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC1 - Manufacture of substances - ERC2 - Formulation of preparations (mixtures)

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	13600000 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m^3

Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Use in polymer processing.
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	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
Process category(ies)	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 (multi-stage and/or significant contact) PROC6 - Calendaring 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 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC13 - Treatment of articles by dipping and pouring PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Product Name	TOLUENE
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - 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

Amounts used

Type	Annual site tonnage
Value	1500
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.1
Release fraction to wastewater from process (initial release prior to RMM)	0
Release fraction to soil from process (initial release prior to RMM)	0.00001

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 80%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	Bulk transfers (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Bulk transfers (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent	Assumes a good basic standard of occupational hygiene is implemented

/limit releases, dispersion and exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	Bulk weighing
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Bulk weighing
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Small scale weighing
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Ensure material transfers are under containment or extract ventilation

Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	Batch process
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC6 - Calendaring operations
Title	Calendaring operations
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Restrict area of openings to equipment Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent	Assumes a good basic standard of occupational hygiene is implemented

/limit releases, dispersion and exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented

Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Drum/batch transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Drum and small package filling
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values

Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - 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

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	1923000 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Use in polymer processing.
Type	Worker
Main user group	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies)	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8d - Wide dispersive outdoor use of processing aids in open systems ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure 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 PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising PROC21 - Low energy manipulation of substances bound in materials and/or articles
Product Name	TOLUENE
Sector(s) of use	SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix
- ERC8d - Wide dispersive outdoor use of processing aids in open systems
- ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Amounts used

Type	Annual site tonnage
Value	3
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	365
Release fraction to air from process (initial release prior to RMM)	0.98

Release fraction to wastewater from process (initial release prior to RMM)	0.01
Release fraction to soil from process (initial release prior to RMM)	0.01

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 0%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 0% If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 0%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	Bulk transfers (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Bulk transfers (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond	Users are advised to consider national Occupational Exposure Limits or other equivalent

the REACH Chemical Safety Report	values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Material transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Restrict area of openings to equipment Provide extract ventilation to points where emissions occur
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent	Assumes a good basic standard of occupational hygiene is implemented

/limit releases, dispersion and exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix

- ERC8d - Wide dispersive outdoor use of processing aids in open systems
- ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	5269 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Formulation & (re)packing of substances and mixtures
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	ERC2 - Formulation of preparations (mixtures)
Process category(ies)	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 (multi-stage 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 tableting, compression, extrusion, pelettising PROC15 - Use as laboratory reagent
Product Name	TOLUENE
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

Amounts used

Type	Annual site tonnage
Value	15000
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	300
Release fraction to wastewater from process (initial release prior to RMM)	0.002

Release fraction to soil from process (initial release prior to RMM)	0.0001
Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements)	0.025

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 0%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond	Users are advised to consider national Occupational Exposure Limits or other equivalent

the REACH Chemical Safety Report	values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	General exposures (closed systems) Batch process
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Batch process Elevated temperature
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Ensure material transfers are under containment or extract ventilation Provide extract ventilation to points where emissions occur
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Elevated temperature

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Process sampling
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities

Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Bulk transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) or Operate activity away from sources of substance emission or release
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Title	Mixing operations (open systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Manual
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and	Assumes a good basic standard of occupational hygiene is implemented

exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Drum/batch transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Drum and small package filling
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP

Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	67800 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Coatings
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies)	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 (multi-stage 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 PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising PROC15 - Use as laboratory reagent
Product Name	TOLUENE
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Amounts used

Type	Annual site tonnage
Value	4500
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.98
Release fraction to wastewater from process (initial release prior to RMM)	0.007
Release fraction to soil from process (initial release prior to RMM)	0

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 90%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent	Assumes a good basic standard of occupational hygiene is implemented

/limit releases, dispersion and exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Film formation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Mixing operations (closed systems) General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	Film formation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Title	Preparation of material for application Mixing operations (open systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values

Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC7 - Industrial spraying
Title	Spraying Automated task
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Carry out in a vented booth or extracted enclosure
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC7 - Industrial spraying
Title	Manual spraying
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Carry out in a vented booth or extracted enclosure or Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator conforming to EN 140 with Type A filter or better
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Material transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Material transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC10 - Roller application or brushing
Title	Roller, spreader, flow application
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Title	Material transfers Drum/batch transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	19900 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m^3
Worker - inhalative, long-term - systemic	192 mg/m^3
Worker - inhalative, short-term - local	384 mg/m^3
Worker - inhalative, short-term - systemic	384 mg/m^3
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m^3

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to

define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Coatings
Type	Worker
Main user group	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies)	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Process category(ies)	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 (multi-stage 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
Product Name	TOLUENE
Sector(s) of use	SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Amounts used

Type	Annual site tonnage
Value	30
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	365

Release fraction to air from process (initial release prior to RMM)	0.98
Release fraction to wastewater from process (initial release prior to RMM)	0.01
Release fraction to soil from process (initial release prior to RMM)	0.01

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 0%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Preparation of material for application
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Title	Preparation of material for application Batch process
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond	Users are advised to consider national Occupational Exposure Limits or other equivalent

the REACH Chemical Safety Report	values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	Film formation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	Film formation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Title	Preparation of material for application
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Title	Preparation of material for application
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC10 - Roller application or brushing
Title	Roller, spreader, flow application
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC10 - Roller application or brushing
Title	Roller, spreader, flow application
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator conforming to EN 140 with Type A filter or better
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC11 - Non industrial spraying
Title	Manual spraying
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Carry out in a vented booth or extracted enclosure
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC11 - Non industrial spraying

Title	Manual spraying
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator conforming to EN 140 with Type A filter or better
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC19 - Hand-mixing with intimate contact and only PPE available
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) Open doors and windows
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Indoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC19 - Hand-mixing with intimate contact and only PPE available
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to

	vessels/large containers at non dedicated facilities
Title	Drum/batch transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use drum pumps or carefully pour from container
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying
Organisational measures to prevent	Assumes a good basic standard of occupational hygiene is implemented

/limit releases, dispersion and exposure	
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	12700 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Coatings
Type	Consumer
Main user group	Consumer uses: Private households (= general public = consumers)
Environmental release category(ies)	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
Product category(ies)	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 PC15 - Non-metal-surface treatment products PC18 - Ink and toners 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
Product Name	TOLUENE
Sector(s) of use	SU21 - Consumer uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems
- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Amounts used

Type	Annual site tonnage
Value	30
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	365
Release fraction to air from process (initial release prior to RMM)	0.985
Release fraction to wastewater from process (initial release prior to RMM)	0.01
Release fraction to soil from process (initial release prior to RMM)	0.005

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment	2000 m3/d

plant flow	
Removal efficiency fraction (offsite; STP)	93.3%

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of consumer exposure	
Product categories [PC]	PC4 - Anti-freeze and de-icing products
Product (sub) category(ies)	Washing car window
Covers concentrations up to	1%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	0.5 g/event
Exposure duration	Avoid carrying out operation for more than 1 minutes
Use frequency	Covers use up to 1 events per day 365 days per year
Covers skin contact area up to	857.5 cm2
Use in room with a volume of minimum	>34 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC4 - Anti-freeze and de-icing products
Product (sub) category(ies)	Pouring into radiator
Covers concentrations up to	10%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	2000 g/event
Exposure duration	Avoid carrying out operation for more than 10 minutes
Use frequency	Covers use up to 1 events per day 365 days per year
Covers skin contact area up to	428 cm2
Use in room with a volume of minimum	>34 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC4 - Anti-freeze and de-icing products
Product (sub) category(ies)	Lock de-icer
Covers concentrations up to	50%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	4 g/event
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers use up to 1 events per day 365 days per year
Covers skin contact area up to	214.40 cm2
Use in room with a volume of minimum	>34 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC8 - Biocidal Products (e.g. disinfectants, pest control)
Product (sub) category(ies)	Laundry and dish washing products
Covers concentrations up to	5%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	15 g/event

Exposure duration	Avoid carrying out operation for more than 0.5 hour
Use frequency	Covers use up to 1 events per day 365 days per year
Covers skin contact area up to	857.5 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC] PC8 - Biocidal Products (e.g. disinfectants, pest control)

Product (sub) category(ies)	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
Covers concentrations up to	5%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	27 g/event
Exposure duration	Avoid carrying out operation for more than 20 minutes
Use frequency	Covers use up to 1 events per day 128 days per year
Covers skin contact area up to	857.5 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC] PC8 - Biocidal Products (e.g. disinfectants, pest control)

Product (sub) category(ies)	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)
Covers concentrations up to	15%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	35 g/event
Exposure duration	Avoid carrying out operation for more than 10 minutes
Use frequency	Covers use up to 1 events per day 128 days per year
Covers skin contact area up to	428 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC] PC9a - Coatings and paints, thinners, paint removers

Product (sub) category(ies)	Waterborne latex wall paint
Covers concentrations up to	0.8%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	2760 g/event
Exposure duration	Avoid carrying out operation for more than 2.2 hours
Use frequency	Covers use up to 1 events per day 4 days per year
Covers skin contact area up to	428.75 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC] PC9a - Coatings and paints, thinners, paint removers

Product (sub) category(ies)	Solvent rich, high solid, water borne paint
Covers concentrations up to	2.5%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	744 g
Exposure duration	Avoid carrying out operation for more than 2.2 hours
Use frequency	Covers use up to 1 events per day 6 days per year
Covers skin contact area up to	428.75 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC9a - Coatings and paints, thinners, paint removers
Product (sub) category(ies)	Removers (paint-, glue-, wall paper-, sealant-remover)
Covers concentrations up to	4%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	491 g
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers use up to 1 events per day 3 days per year
Covers skin contact area up to	857.5 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC9b - Fillers, putties, plasters, modelling clay
Product (sub) category(ies)	Fillers and putty
Covers concentrations up to	2%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	85 g/event
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers use up to 1 events per day 12 days per year
Covers skin contact area up to	35.73 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC9b - Fillers, putties, plasters, modelling clay
Product (sub) category(ies)	Plasters and floor equalisers
Covers concentrations up to	0.1%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	13800 g
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers use up to 1 events per day 12 days per year
Covers skin contact area up to	857.5 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC9b - Fillers, putties, plasters, modelling clay
Product (sub) category(ies)	Modelling clay
Covers concentrations up to	1%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	1 g/event
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers use up to 1 events per day 365 days per year
Covers skin contact area up to	254.40 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC9c - Finger paints
Covers concentrations up to	0.1%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	1.35 g/event
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers use up to 1 events per day 365 days per year

Covers skin contact area up to	254.40 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC15 - Non-metal-surface treatment products
Product (sub) category(ies)	Waterborne latex wall paint
Covers concentrations up to	0.28%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	2760 g/event
Exposure duration	Avoid carrying out operation for more than 2.2 hours
Use frequency	Covers use up to 1 events per day 4 days per year
Covers skin contact area up to	428.75 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC15 - Non-metal-surface treatment products
Product (sub) category(ies)	Solvent rich, high solid, water borne paint
Covers concentrations up to	1%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	744 g/event
Exposure duration	Avoid carrying out operation for more than 2.2 hours
Use frequency	Covers use up to 1 events per day 6 days per year
Covers skin contact area up to	428.75 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC15 - Non-metal-surface treatment products
Product (sub) category(ies)	Aerosol spray can
Covers concentrations up to	4.5%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	215 g/event
Exposure duration	Avoid carrying out operation for more than 20 minutes
Use frequency	Covers use up to 1 events per day 2 days per year
Covers skin contact area up to	857.5 cm2
Use in room with a volume of minimum	>34 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC15 - Non-metal-surface treatment products
Product (sub) category(ies)	Removers (paint-, glue-, wall paper-, sealant-remover)
Covers concentrations up to	1.5%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	491 g/event
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers use up to 1 events per day 3 days per year
Covers skin contact area up to	857.5 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC18 - Ink and toners
Covers concentrations up to	10%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB

Amounts used	40 g/event
Exposure duration	Avoid carrying out operation for more than 2.2 hours
Use frequency	Covers use up to 1 events per day 365 days per year
Covers skin contact area up to	71.40 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC23 - Leather tanning, dye, finishing, impregnation and care products
Product (sub) category(ies)	Polishes, wax / cream (floor, furniture, shoes)
Covers concentrations up to	11%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	56 g/event
Exposure duration	Avoid carrying out operation for more than 1.23 hours
Use frequency	Covers use up to 1 events per day 29 days per year
Covers skin contact area up to	430 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC23 - Leather tanning, dye, finishing, impregnation and care products
Product (sub) category(ies)	Polishes, spray (furniture, shoes)
Covers concentrations up to	8%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	56 g/event
Exposure duration	Avoid carrying out operation for more than 20 minutes
Use frequency	Covers use up to 1 events per day 8 days per year
Covers skin contact area up to	430 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC31 - Polishes and wax blends
Product (sub) category(ies)	Polishes, wax / cream (floor, furniture, shoes)
Covers concentrations up to	4.5%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	142 g/event
Exposure duration	Avoid carrying out operation for more than 1.23 hours
Use frequency	Covers use up to 1 events per day 29 days per year
Covers skin contact area up to	430 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC31 - Polishes and wax blends
Product (sub) category(ies)	Polishes, spray (furniture, shoes)
Covers concentrations up to	14%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	35 g/event
Exposure duration	Avoid carrying out operation for more than 20 minutes
Use frequency	Covers use up to 1 events per day 8 days per year
Covers skin contact area up to	430 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC34 - Textile dyes, finishing and impregnating products
Covers concentrations up to	5%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	115 g/event
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers use up to 1 events per day 365 days per year
Covers skin contact area up to	857.5 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC24 - Lubricants, greases, release products
Product (sub) category(ies)	Liquids
Covers concentrations up to	35%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	2200 g/event
Exposure duration	Avoid carrying out operation for more than 10 minutes
Use frequency	Covers use up to 1 events per day 4 days per year
Covers skin contact area up to	468 cm2
Use in room with a volume of minimum	>34 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC24 - Lubricants, greases, release products
Product (sub) category(ies)	Pastes
Covers concentrations up to	20%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	34 g/event
Exposure duration	Avoid carrying out operation for more than 6 hours
Use frequency	Covers use up to 1 events per day 10 days per year
Covers skin contact area up to	468 cm2
Use in room with a volume of minimum	>34 m3
Operational conditions	Assumes activities are at room temperature

Product categories [PC]	PC24 - Lubricants, greases, release products
Product (sub) category(ies)	Sprays
Covers concentrations up to	5%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Amounts used	73 g/event
Exposure duration	Avoid carrying out operation for more than 10 minutes
Use frequency	Covers use up to 1 events per day 6 days per year
Covers skin contact area up to	428.75 cm2
Use in room with a volume of minimum	20 m3
Operational conditions	Assumes activities are at room temperature

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	13600 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	Used ECETOC TRA model

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Use in laboratories
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	ERC2 - Formulation of preparations (mixtures) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies)	PROC10 - Roller application or brushing PROC15 - Use as laboratory reagent
Product Name	TOLUENE
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)
- ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Amounts used

Type	Annual site tonnage
Value	1500
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.025
Release fraction to wastewater from process (initial release prior to RMM)	0.02
Release fraction to soil from process (initial release prior to RMM)	0.0001

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%

Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 0%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC10 - Roller application or brushing
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up

the worker	contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	7020 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Use in laboratories
Type	Worker
Main user group	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies)	ERC8a - Wide dispersive indoor use of processing aids in open systems
Process category(ies)	PROC10 - Roller application or brushing PROC15 - Use as laboratory reagent
Product Name	TOLUENE
Sector(s) of use	SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

Amounts used

Type	Annual site tonnage
Value	3
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	365
Release fraction to air from process (initial release prior to RMM)	0.5
Release fraction to wastewater from process (initial release prior to RMM)	0.5
Release fraction to soil from process (initial release prior to RMM)	0

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or

	reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 0%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC15 - Use as laboratory reagent
Title	Laboratory activities
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC10 - Roller application or brushing
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately.

	Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	280 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Functional fluids
Type	Worker
Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies)	ERC7 - Industrial use of substances in closed systems
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure 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) PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Product Name	TOLUENE
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Amounts used

Type	Annual site tonnage
Value	1500
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	300
Release fraction to air from process (initial release prior to RMM)	0.01
Release fraction to wastewater from process (initial release prior to RMM)	0.0003
Release fraction to soil from process	0.001

(initial release prior to RMM)	

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 0%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	Bulk transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Bulk transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities

Title	Drum/batch transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Drum/batch transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems)

Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Re-manufacture of reject articles
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage

Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC7 - Industrial use of substances in closed systems

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method Used EUSES model

Msafe	455000 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	Functional fluids
Type	Worker
Main user group	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies)	ERC9a - Wide dispersive indoor use of substances in closed systems ERC9b - Wide dispersive outdoor use of substances in closed systems
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure 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 PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Product Name	TOLUENE
Sector(s) of use	SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems
- ERC9b - Wide dispersive outdoor use of substances in closed systems

Amounts used

Type	Annual site tonnage
Value	3
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	365
Release fraction to air from process (initial release prior to RMM)	0.05
Release fraction to wastewater from process (initial release prior to RMM)	0.025
Release fraction to soil from process (initial release prior to RMM)	0.025

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 0%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Drum/batch transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use drum pumps or carefully pour from container
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use drum pumps or carefully pour from container
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	General exposures (closed systems)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Title	General exposures (open systems) Elevated temperature
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a predominantly closed system provided with extract ventilation
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Elevated temperature

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use drum pumps or carefully pour from container
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Title	Re-manufacture of reject articles
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond	Users are advised to consider national Occupational Exposure Limits or other equivalent

the REACH Chemical Safety Report	values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Drain down system prior to equipment break-in or maintenance
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems - ERC9b - Wide dispersive outdoor use of substances in closed systems

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	Used EUSES model
Msafe	2660 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Product Name	TOLUENE
Chemical name	TOLUENE
Pure substance/mixture	Substance
REACH registration number	01-2119471310-51-XXXX
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306
E-mail address	SDS.EMEA@univarsolutions.com

Section 1 - Title

Title	road and construction products.
Type	Worker
Main user group	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Environmental release category(ies)	ERC8d - Wide dispersive outdoor use of processing aids in open systems ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure PROC2 - Use in closed, continuous process with occasional controlled exposure 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
Product Name	TOLUENE
Sector(s) of use	SU22 - Professional uses

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8d - Wide dispersive outdoor use of processing aids in open systems
- ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Amounts used

Type	Annual site tonnage
Value	60
Units	t(ons)/year

Product characteristics

Remarks	Substance is complex UVCB

Other operational conditions of use affecting environmental exposure

Type	Continuous release
Emission days	365

Release fraction to air from process (initial release prior to RMM)	0.95
Release fraction to wastewater from process (initial release prior to RMM)	0.01
Release fraction to soil from process (initial release prior to RMM)	0.04

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000 m3/d
Removal efficiency fraction (offsite; STP)	93.3%
Sludge treatment	Do not apply industrial sludge to natural soils Sludge should be incinerated, contained or reclaimed

Environmental factors not influenced by risk management

Local freshwater dilution factor	10
Local marine water dilution factor	100

Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Prevent discharge of undissolved substance to or recover from onsite wastewater

Control measures to prevent releases

Air	Treat air emission to provide a typical removal efficiency of 0%
Water	Onsite wastewater treatment required Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of 93.3%

Conditions and measures related to external treatment of waste for disposal

Disposal	External treatment and disposal of waste should comply with applicable local and/or national regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Drum/batch transfers
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Title	Drum/batch transfers
Covers concentrations up to	100%

Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Ensure material transfers are under containment or extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable respiratory protection (conforming to EN 140 with Type A filter or better) and gloves (type EN 374) if regular skin contact likely
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC10 - Roller application or brushing
Title	Manual
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC11 - Non industrial spraying
Title	Spraying Machine
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator conforming to EN 140 with Type A filter or better
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Title	Treatment of articles by dipping and pouring
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Indoor/Outdoor use	Outdoor
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Title	Equipment cleaning and maintenance
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (10 to 15 air changes per hour) Retain drain downs in sealed storage pending disposal or for subsequent recycle
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Title	Storage
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented
Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Title	General measures applicable to all activities Skin irritation
Covers concentrations up to	100%
Physical form of product	Liquid, vapour pressure 0.5 - 10 kPa at STP
Remarks	Substance is complex UVCB
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN 374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop
Conditions and measures related to personal protection, hygiene and health evaluation	Other skin protection measures such as impervious suits and face shields may be required during high dispersion activities which are likely to lead to substantial aerosol release, e.g. spraying
Organisational measures to prevent /limit releases, dispersion and exposure	Assumes a good basic standard of occupational hygiene is implemented

Additional good practice advice beyond the REACH Chemical Safety Report	Users are advised to consider national Occupational Exposure Limits or other equivalent values
Operational conditions	Assumes use at not more than 20°C above ambient temperature, unless stated differently

Section 3 - Exposure estimation

Environmental release category(ies) - ERC8d - Wide dispersive outdoor use of processing aids in open systems - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Predicted No Effect Concentration (PNEC)

Freshwater	0.68 mg/l
Freshwater sediment	16.39 mg/kg dwt
Marine water	0.68 mg/l
Marine sediment	16.39 mg/kg dwt
Soil	2.89 mg/kg dwt
Impact on Sewage Treatment	13.61 mg/l

Calculation method	The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model
Msafe	5748 kg/d
Remarks	Predicted exposures are not expected to exceed the applicable exposure limits (given in section 8 of the SDS) when the operational conditions/risk management measures given in section 2 are implemented

Derived No Effect Level (DNEL):

Worker - dermal, long-term - systemic	384 mg/kg bw/d
Worker - inhalative, long-term - local	192 mg/m³
Worker - inhalative, long-term - systemic	192 mg/m³
Worker - inhalative, short-term - local	384 mg/m³
Worker - inhalative, short-term - systemic	384 mg/m³
Consumer - oral, long-term - systemic	8.13 mg/kg bw/d
Consumer - dermal, long-term - systemic	226 mg/kg bw/d
Consumer - inhalative, long-term - systemic	56.5 mg/m³

Calculation method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Remarks	Available hazard data does not enable the derivation of a DNEL for dermal irritant effects Risk management measures are based on qualitative risk characterization

Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination. Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination. Further details on scaling and control technologies are provided in SpERC factsheet.

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.