Toluene

Safety Data Sheet

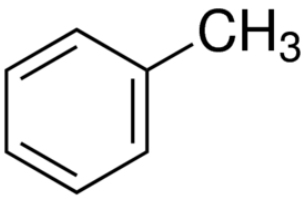
according to Regulation (EU) 2015/830

Date of issue: 01/06/2022

Doc No: SDS-973.015/2

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

1.1. Product identifier

Product form	:	Substance
Substance name	:	Toluene
EC Index-No.	:	601-021-00-3
EC-No.	:	203-625-9
CAS-No.	:	108-88-3
Type of product	:	Pure substance
Formula	:	C_7H_8
Chemical structure	:	
Synonyms	:	ANTISAL 1A / benzene, methyl- / benzyl hydride / CASWELL no 859 / CP 25 / formula No 06500 / methacide / methane, phenyl- / methylbenzene / phenylmethane / reference fuel, toluene / retinaphtha / solvent toluene / solvesso toluene / tol / Toluene / toluene chromasolv / toluene pestanal / toluene regen / toluene spectranal / toluene, nitration grade / toluene, pure / toluene, reference fuel / tolunol / toluol oil / toluole / tolu-sol

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

1.2.1. Relevant identified uses

Use of the substance/mixture : Solvent

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

ISOLAB Laborgeräte GmbH
Am Dillhof 2 - 63863 Eschau / GERMANY
Tel: + 49 93 74 / 978 55-0
Fax: +49 93 74 / 978 55-29
prodsafe@isolab.de

1.4. Emergency telephone number

Country	Organisation/Company	Address	Emergency number	Comment
Germany	Giftnotruf der Charité CBF, Haus VIII (Wirtschaftgebäude), UG	Hindenburgdamm 30 12203 Berlin	+49 30 19240	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Flam. Liq. 2 H225
Repr. 2 H361d
Asp. Tox. 1 H304
STOT RE 2 H373
Skin Irrit. 2 H315
STOT SE 3 H336

Full text of hazard classes and H-statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS02 GHS08 GHS07

Signal word (CLP) : Danger

Hazard statements (CLP) : H225 - Highly flammable liquid and vapour
H361d - Suspected of damaging the unborn child
H304 - May be fatal if swallowed and enters airways
H373 - May cause damage to organs through prolonged or repeated exposure (if inhaled)
H315 - Causes skin irritation
H336 - May cause drowsiness or dizziness

Precautionary statements (CLP) : P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P240: Ground/bond container and receiving equipment.
P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P314: Get medical advice/ attention if you feel unwell.
P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%
Toluene	(CAS-No.) 108-88-3 (EC-No.) 203-625-9 (EC Index-No.) 601-021-00-3	100

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give alcohol to drink.

First-aid measures after inhalation : Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact : Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Remove clothing before washing. Take victim to a doctor if irritation persists. Take victim to a doctor/medical service if irritation persists.

First-aid measures after eye contact : Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to a doctor/medical service if irritation persists. Take victim to an ophthalmologist if irritation persists.

First-aid measures after ingestion : Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not give milk/oil to drink. Do not induce vomiting. Give activated charcoal. Call Poison Information Centre (www.big.be/antigif.htm). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital.

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

Symptoms/effects after inhalation : EXPOSURE TO HIGH CONCENTRATIONS: Headache. Nausea. Feeling of weakness. Dizziness. Central nervous system depression. Narcosis. Mental confusion. Drunkenness. Coordination disorders. Disturbed motor response. Disturbances of consciousness.

Symptoms/effects after skin contact : Tingling/irritation of the skin. Red skin.

Symptoms/effects after eye contact : Irritation of the eye tissue.

Symptoms/effects after ingestion	:	Risk of aspiration pneumonia. Nausea. Abdominal pain. Irritation of the gastric/intestinal mucosa. Symptoms similar to those listed under inhalation.
Chronic symptoms	:	ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Dry skin. Skin rash/inflammation. Impairment of the nervous system. Tremor. Impaired memory. Impaired concentration. Brain affection. Disturbances of heart rate. Change in the haemogramme/blood composition.

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

No additional information available

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	Preferably: alcohol resistant foam. Water spray. BC powder. Polyvalent foam. AFFF foam. Carbon dioxide.
Unsuitable extinguishing media	:	Container may slop over if solid jet (water/foam) is applied.

5.2. Special hazards arising from the substance or mixture

Fire hazard	:	DIRECT FIRE HAZARD. Highly flammable. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD. May build up electrostatic charges: risk of ignition. May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard	:	DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. may be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".

5.3. Advice for firefighters

Firefighting instructions	:	Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat.
Protection during firefighting	:	Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	:	Gloves. Protective goggles. Head/neck protection. Protective clothing. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit. See "Material-Handling" to select protective clothing.
Emergency procedures	:	Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Keep containers closed. Wash contaminated clothes.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent soil and water pollution.

6.3. Methods and material for containment and cleaning up

For containment	:	Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute/disperse combustible gas/vapour with water curtain. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills.
Methods for cleaning up	:	Liquid spill: cover with foam. Take up liquid spill into inert absorbent material, e.g.: sand, earth, vermiculite. Scoop absorbed substance into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe strict hygiene. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation.

7.2. Conditions for safe storage, including any incompatibilities

Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.

Information on mixed storage : KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. halogens.

Storage area : Store at ambient temperature. Ventilation at floor level. Fireproof storeroom. Provide for a tub to collect spills. Provide the tank with earthing. Under a shelter/in the open. Store only in a limited quantity. May be stored under nitrogen. Meet the legal requirements. Keep out of direct sunlight.

Special rules on packaging : SPECIAL REQUIREMENTS: closing. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials : SUITABLE MATERIAL: metal. stainless steel. carbon steel. aluminium. nickel. polypropylene. glass. tin. MATERIAL TO AVOID: polyethylene.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Toluene (108-88-3)		
EU	Local name	Toluene
EU	IOELV TWA (mg/m³)	192 mg/m³ (Toluene; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)
EU	IOELV TWA (ppm)	50 ppm (Toluene; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)
EU	IOELV STEL (mg/m³)	384 mg/m³ (Toluene; EU; Short time value; Indicative occupational exposure limit value)
EU	IOELV STEL (ppm)	100 ppm (Toluene; EU; Short time value; Indicative occupational exposure limit value)
EU	Notes	skin
Austria	Local name	Toluol
Austria	MAK (mg/m³)	190 mg/m³
Austria	MAK (ppm)	50 ppm
Austria	MAK Short time value (mg/m³)	380 mg/m³
Austria	MAK Short time value (ppm)	100 ppm
Austria	Remark (AT)	H
Belgium	Local name	Toluène # Tolueen
Belgium	Limit value (mg/m³)	77 mg/m³ (Toluène; Belgium; Time-weighted average exposure limit 8 h)
Belgium	Limit value (ppm)	20 ppm (Toluène; Belgium; Time-weighted average exposure limit 8 h)
Belgium	Short time value (mg/m³)	384 mg/m³ (Toluène; Belgium; Short time value)
Belgium	Short time value (ppm)	100 ppm (Toluène; Belgium; Short time value)
Belgium	Remark (BE)	D: La mention D signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air. # De vermelding D betekent dat de opname van het agens via de huid, de slijmvliezen of de ogen een belangrijk deel van de totale blootstelling vormt. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.
Bulgaria	Local name	Толуен
Bulgaria	OEL TWA (mg/m³)	192 mg/m³

Toluene (108-88-3)		
Bulgaria	OEL TWA (ppm)	50 ppm
Bulgaria	OEL STEL (mg/m³)	384 mg/m³
Bulgaria	OEL STEL (ppm)	100 ppm
Bulgaria	Notes	Кожа (възможна е значителна резорбция чрез кожата); • (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
Croatia	Local name	Toluen
Croatia	GVI (granična vrijednost izloženosti) (mg/m³)	192 mg/m³
Croatia	GVI (granična vrijednost izloženosti) (ppm)	50 ppm
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (mg/m³)	384 mg/m³
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (ppm)	100 ppm
Croatia	Naznake (HR)	K (Skin): (naznaka da tvar može štetno djelovati kroz kožu); EU** (naznaka da se radi o tvarima za koje su utvrđene indikativne granične vrijednosti izloženosti prema Direktivi 2006/15/ EC (druga lista)); F (lako zapaljivo); Xn (Štetno); Repr. kat. 3 (tvari za koje se pretpostavlja da bi mogle smanjiti plodnost kod ljudi i/ili – tvari za koje se pretpostavlja da bi mogle iskazati razvojnu otrovnost kod ljudi)
Czech Republic	Local name	Toluen
Czech Republic	Expoziční limity (PEL) (mg/m³)	200 mg/m³
Czech Republic	Expoziční limity (PEL) (ppm)	53 ppm
Czech Republic	Expoziční limity (NPK-P) (mg/m³)	500 mg/m³
Czech Republic	Expoziční limity (NPK-P) (ppm)	130 ppm
Czech Republic	Remark (CZ)	D
Denmark	Local name	Toluen (Methylbenzen; Phenylmethan)
Denmark	Grænseværdie (langvarig) (mg/m³)	94 mg/m³
Denmark	Grænseværdie (langvarig) (ppm)	25 ppm
Denmark	Anmærkninger (DK)	E (betyder, at stoffet har en EF-grænseværdi); H (betyder, at stoffet kan optages gennem huden)
Estonia	Local name	Tolueen (metüülbenseen)
Estonia	OEL TWA (mg/m³)	192 mg/m³
Estonia	OEL TWA (ppm)	50 ppm
Estonia	OEL STEL (mg/m³)	384 mg/m³
Estonia	OEL STEL (ppm)	100 ppm
Finland	Local name	Tolueeni
Finland	HTP-arvo (8h) (mg/m³)	81 mg/m³
Finland	HTP-arvo (8h) (ppm)	25 ppm
Finland	HTP-arvo (15 min)	380 mg/m³
Finland	HTP-arvo (15 min) (ppm)	100 ppm
Finland	Huomautus (FI)	iho, melu
France	Local name	Toluène
France	VME (mg/m³)	76.8 mg/m³ (Toluène; France; Time-weighted average exposure limit 8 h; VRC: Valeur réglementaire contraignante)
France	VME (ppm)	20 ppm (Toluène; France; Time-weighted average exposure limit 8 h; VRC: Valeur réglementaire contraignante)
France	VLE (mg/m³)	384 mg/m³ (Toluène; France; Short time value; VRC: Valeur réglementaire contraignante)

Toluene (108-88-3)		
France	VLE (ppm)	100 ppm (Toluène; France; Short time value; VRC: Valeur réglementaire contraignante)
France	Note (FR)	Valeurs règlementaires contraignantes; substance classée toxique pour la reproduction de catégorie 2; risque de pénétration percutanée
Germany	Local name	Toluol
Germany	TRGS 900 Occupational exposure limit value (mg/m³)	190 mg/m³
Germany	TRGS 900 Occupational exposure limit value (ppm)	50 ppm
Germany	Remark (TRGS 900)	DFG,EU,H,Y
Greece	OEL TWA (mg/m³)	192 mg/m³
Greece	OEL TWA (ppm)	50 ppm
Greece	OEL STEL (mg/m³)	384 mg/m³
Greece	OEL STEL (ppm)	100 ppm
Hungary	Local name	TOLUOL
Hungary	AK-érték	190 mg/m³
Hungary	CK-érték	380 mg/m³
Hungary	Megjegyzések (HU)	b, i; II.2.
Ireland	Local name	Toluene
Ireland	OEL (8 hours ref) (mg/m³)	192 mg/m³
Ireland	OEL (8 hours ref) (ppm)	50 ppm
Ireland	OEL (15 min ref) (mg/m3)	384 mg/m³
Ireland	OEL (15 min ref) (ppm)	100 ppm
Ireland	Notes (IE)	Sk, IOELV
Italy	Local name	Toluene
Italy	OEL TWA (mg/m³)	192 mg/m³
Italy	OEL TWA (ppm)	50 ppm
Latvia	Local name	Toluols (metilbenzols)
Latvia	OEL TWA (mg/m³)	50 mg/m³
Latvia	OEL TWA (ppm)	14 ppm
Latvia	OEL STEL (mg/m³)	150 mg/m³
Latvia	OEL STEL (ppm)	40 ppm
Lithuania	Local name	Toluenas
Lithuania	IPRV (mg/m³)	192 mg/m³
Lithuania	IPRV (ppm)	50 ppm
Lithuania	TPRV (mg/m³)	384 mg/m³
Lithuania	TPRV (ppm)	100 ppm
Lithuania	Remark (LT)	R (reprodukcijai toksiškas poveikis); O (medžiaga į organizmą gali prasiskverbti pro nepažeistą odą)
Luxembourg	Local name	Toluène
Luxembourg	OEL TWA (mg/m³)	192 mg/m³
Luxembourg	OEL TWA (ppm)	50 ppm
Luxembourg	OEL STEL (mg/m³)	384 mg/m³
Luxembourg	OEL STEL (ppm)	100 ppm
Malta	Local name	Toluene
Malta	OEL TWA (mg/m³)	192 mg/m³
Malta	OEL TWA (ppm)	50 ppm
Malta	OEL STEL (mg/m³)	384 mg/m³
Malta	OEL STEL (ppm)	100 ppm
Netherlands	Local name	Tolueen
Netherlands	Grenswaarde TGG 8H (mg/m³)	150 mg/m³ (Tolueen; Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value)

Toluene (108-88-3)		
Netherlands	Grenswaarde TGG 8H (ppm)	39 ppm (Tolueen; Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value)
Netherlands	Grenswaarde TGG 15MIN (mg/m³)	384 mg/m³ (Tolueen; Netherlands; Short time value; Public occupational exposure limit value)
Netherlands	Grenswaarde TGG 15MIN (ppm)	100 ppm (Tolueen; Netherlands; Short time value; Public occupational exposure limit value)
Poland	Local name	Toluen
Poland	NDS (mg/m³)	100 mg/m³
Poland	NDSCh (mg/m³)	200 mg/m³
Portugal	Local name	Tolueno
Portugal	OEL TWA (ppm)	20 ppm
Romania	Local name	Toluen
Romania	OEL TWA (mg/m³)	192 mg/m³
Romania	OEL TWA (ppm)	50 ppm
Romania	OEL STEL (mg/m³)	384 mg/m³
Romania	OEL STEL (ppm)	100 ppm
Slovakia	Local name	Toluén
Slovakia	NPHV (priemerná) (mg/m³)	192 mg/m³
Slovakia	NPHV (priemerná) (ppm)	50 ppm
Slovakia	OEL STEL (mg/m³)	384 mg/m³
Slovakia	OEL STEL (ppm)	100 ppm
Slovakia	Upozornenie (SK)	K - znamená, že faktor môže byť ľahko absorbovaný kožou
Slovenia	Local name	toluen
Slovenia	OEL TWA (mg/m³)	192 mg/m³
Slovenia	OEL TWA (ppm)	50 ppm
Slovenia	OEL STEL (mg/m³)	384 mg/m³
Slovenia	OEL STEL (ppm)	100 ppm
Spain	Local name	Tolueno
Spain	VLA-ED (mg/m³)	192 mg/m³
Spain	VLA-ED (ppm)	50 ppm
Spain	VLA-EC (mg/m³)	384 mg/m³
Spain	VLA-EC (ppm)	100 ppm

Toluene (108-88-3)		
Spain	Notes	Vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante. Para más información véase el Apartado 5 de este documento), VLB® (Agente químico que tiene Valor Límite Biológico específico en este documento), VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país), r (Esta sustancia tiene establecidas restricciones a la fabricación, la comercialización o el uso en los términos especificados en el "Reglamento (CE) nº 1907/2006 sobre Registro, Evaluación, Autorización y Restricción de sustancias y preparados químicos" (REACH) de 18 de diciembre de 2006 (DOUE L 369 de 30 de diciembre de 2006). Las restricciones de una sustancia pueden aplicarse a todos los usos o sólo a usos concretos. El anexo XVII del Reglamento REACH contiene la lista de todas las sustancias restringidas y especifica los usos que se han restringido).
Sweden	Local name	Toluen
Sweden	nivågränsvärde (NVG) (mg/m³)	192 mg/m³
Sweden	nivågränsvärde (NVG) (ppm)	50 ppm
Sweden	kortidsvärde (KTV) (mg/m³)	384 mg/m³
Sweden	kortidsvärde (KTV) (ppm)	100 ppm
Sweden	Anmärkning (SE)	B (Ämnet kan orsaka hörselskada Exponering för ämnet nära det befintliga yrkeshygieniska gränsvärdet och vid samtidig exponering för buller nära insatsvärdet 80 dB kan orsaka hörselskada); H (Ämnet kan lätt upptas genom huden Det föreskrivna gränsvärdet bedöms ge tillräckligt skydd endast under förutsättning att huden är skyddad mot exponering för ämnet ifråga)
United Kingdom	Local name	Toluene
United Kingdom	WEL TWA (mg/m³)	191 mg/m³ Toluene; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
United Kingdom	WEL TWA (ppm)	50 ppm Toluene; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
United Kingdom	WEL STEL (mg/m³)	384 mg/m³ Toluene; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
United Kingdom	WEL STEL (ppm)	100 ppm Toluene; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
United Kingdom	Remark (WEL)	Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity)
Russian Federation	Local name	Метилбензол
Russian Federation	OEL Ceiling (mg/m³)	150 mg/m³
Russian Federation	OEL TWA (mg/m³)	50 mg/m³
Russian Federation	Remark (RU)	3 класс опасности - опасное; п (пары и/или газы)
Norway	Local name	Toluen

Toluene (108-88-3)		
Norway	Grenseverdier (AN) (mg/m³)	94 mg/m³
Norway	Grenseverdier (AN) (ppm)	25 ppm
Norway	Merknader (NO)	H (Kjemikalier som kan tas opp gjennom huden); E (EU har en veiledende grenseverdi for stoffet)
Switzerland	Local name	Toluol
Switzerland	VME (mg/m³)	190 mg/m³
Switzerland	VME (ppm)	50 ppm
Switzerland	VLE (mg/m³)	760 mg/m³
Switzerland	VLE (ppm)	200 ppm
Switzerland	Remark (CH)	H O^{L} B $R2_{F}$ $R2_{D}$ SS_{C} - Sehen, $ZNS^{KT\ HU}$ - DFG, HSE, INRS, NIOSH, die MAK für Benzol muss eingehalten werden
Turkey	Local name	Toluen
Turkey	OEL TWA (mg/m³)	192 mg/m³
Turkey	OEL TWA (ppm)	50 ppm
Turkey	OEL STEL (mg/m³)	384 mg/m³
Turkey	OEL STEL (ppm)	100 ppm
Turkey	Comments	Deri
Australia	Local name	Toluene
Australia	TWA (mg/m³)	191 mg/m³
Australia	TWA (ppm)	50 ppm
Australia	STEL (mg/m³)	574 mg/m³
Australia	STEL (ppm)	150 ppm
Australia	Remark (AU)	Sk - Absorption through the skin may be a significant source of exposure.
USA - ACGIH	Local name	Toluene
USA - ACGIH	ACGIH TWA (ppm)	20 ppm (Toluene; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
USA - ACGIH	Remark (ACGIH)	Visual impair; female repro;
USA - OSHA	Local name	Toluene
USA - OSHA	Remark (OSHA)	(2) See Table Z-2.

8.2. Exposure controls

Materials for protective clothing:

GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: tetrafluoroethylene. viton. PVA. GIVE LESS RESISTANCE: butyl rubber. natural rubber. neoprene. nitrile rubber. polyethylene. neoprene/natural rubber. nitrile rubber/PVC. GIVE POOR RESISTANCE: chloroprene rubber

Hand protection:

Gloves

Eye protection:

Safety glasses

Skin and body protection:

Head/neck protection. Protective clothing

Respiratory protection:

Wear gas mask with filter type A if conc. in air > exposure limit

Device	Filter type	Condition	Standard
Gas mask	Type A - High-boiling (>65 °C) organic compounds	If conc. in air > exposure limit	

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Liquid.
Molecular mass	:	92.14 g/mol
Colour	:	Colourless.
Odour	:	Aromatic odour.
Odour threshold	:	0.2 - 69 ppm 0.8 - 276 mg/m³
pH	:	No data available
Relative evaporation rate (butylacetate=1)	:	2.24
Melting point	:	-95 °C
Freezing point	:	No data available
Boiling point	:	110.6 °C
Flash point	:	4 °C
Critical temperature	:	321 °C
Auto-ignition temperature	:	480 °C
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapour pressure	:	29 hPa (20 °C)
Vapour pressure at 50 °C	:	109 hPa (50 °C)
Critical pressure	:	41077 hPa
Relative vapour density at 20 °C	:	No data available
Relative density	:	0.87
Relative density of saturated gas/air mixture	:	1.6
Density	:	0.87 g/cm³(20 °C)
Solubility	:	Insoluble in water. Soluble in ethanol. Soluble in ether. Soluble in acetone. Soluble in chloroform. Soluble in carbondisulfide. Soluble in acetic acid. Soluble in ethylacetate. Soluble in petroleum spirit. Water: 0.052 g/100ml Ethanol: Complete Ether: Complete Acetone: > 10 g/100ml
Log Pow	:	2.73 (Experimental value; Other; 20 °C)
Viscosity, kinematic	:	0.7 mm²/s (20 °C)
Viscosity, dynamic	:	0.0006 Pa.s (20 °C)
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	1.2 - 7 vol % 46 - 270 g/m³

9.2. Other information

Minimum ignition energy	:	0.3 mJ
Specific conductivity	:	< 1 pS/m
Saturation concentration	:	110 g/m³
VOC content	:	100 %
Other properties	:	Gas/vapour heavier than air at 20°C. Clear. Volatile. Substance has neutral reaction. May generate electrostatic charges.

SECTION 10: Stability and reactivity

10.1. Reactivity

Upon combustion: CO and CO2 are formed. Reacts violently with (some) halogens. Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Violent to explosive reaction with (some) acids.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Toluene (108-88-3)	
LD50 oral rat	> 2000 mg/kg (Rat; Equivalent or similar to OECD 401; Literature study; 5580 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rabbit	12223 mg/kg (Rabbit; Literature study; Other; >5000 mg/kg bodyweight; Rabbit; Experimental value)
LC50 inhalation rat (mg/l)	> 20 mg/l/4h (Rat; Literature study)

Skin corrosion/irritation : Causes skin irritation.

Serious eye damage/irritation : Not classified

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Suspected of damaging the unborn child.

STOT-single exposure : May cause drowsiness or dizziness.

STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure (if inhaled).

Aspiration hazard : May be fatal if swallowed and enters airways.

IARC group : 3

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.

Ecology - air : Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.5/I.

Ecology - water : Fouling to shoreline. Ground water pollutant. Toxic to fishes. Toxic to invertebrates. Harmful to algae. Inhibits photosynthesis of algae. Harmful to bacteria. Taste alteration in fishes/aquatic organisms.

12.2. Persistence and degradability

Toluene (108-88-3)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil. Low potential for adsorption in soil.
Biochemical oxygen demand (BOD)	2.15 g O_2/g substance
Chemical oxygen demand (COD)	2.52 g O_2/g substance
ThOD	3.13 g O_2/g substance
BOD (% of ThOD)	0.69

12.3. Bioaccumulative potential

Toluene (108-88-3)	
BCF fish 2	90 (BCF; 72 h; Leuciscus idus; Static system; Fresh water)
Log Pow	2.73 (Experimental value; Other; 20 °C)

Toluene (108-88-3)	
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

Toluene (108-88-3)	
Surface tension	0.03 N/m (20 °C)

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle by distillation. Do not landfill. Incinerate under surveillance with energy recovery. Do not discharge into drains or the environment. May be discharged to company wastewater treatment plant.

Additional information : LWCA (the Netherlands): KGA category 03. Hazardous waste according to Directive 2008/98/EC.

European List of Waste (LoW) code : 07 01 04* - other organic solvents, washing liquids and mother liquors

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
1294	1294	1294	1294	1294
14.2. UN proper shipping name				
TOLUENE	TOLUENE	Toluene	TOLUENE	TOLUENE
Transport document description				
UN 1294 TOLUENE, 3, II, (D/E)	UN 1294 TOLUENE, 3, II (7°C c.c.)	UN 1294 Toluene, 3, II	UN 1294 TOLUENE, 3, II	UN 1294 TOLUENE, 3, II
14.3. Transport hazard class(es)				
3	3	3	3	3
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : F1

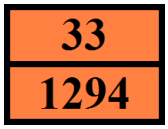
Limited quantities (ADR) : 1l

Excepted quantities (ADR) : E2

Packing instructions (ADR) : P001, IBC02, R001

Special packing provisions (ADR) : RR7

Mixed packing provisions (ADR) : MP19

Portable tank and bulk container instructions (ADR)	:	T4
Portable tank and bulk container special provisions (ADR)	:	TP1
Tank code (ADR)	:	LGBF
Vehicle for tank carriage	:	FL
Transport category (ADR)	:	2
Special provisions for carriage - Operation (ADR)	:	S2, S20
Hazard identification number (Kemler No.)	:	33
Orange plates	:	
Tunnel restriction code (ADR)	:	D/E
EAC code	:	3YE

- Transport by sea

Transport regulations (IMDG)	:	Subject
Limited quantities (IMDG)	:	1 L
Excepted quantities (IMDG)	:	E2
Packing instructions (IMDG)	:	P001
IBC packing instructions (IMDG)	:	IBC02
Tank instructions (IMDG)	:	T4
Tank special provisions (IMDG)	:	TP1
EmS-No. (Fire)	:	F-E
EmS-No. (Spillage)	:	S-D
Stowage category (IMDG)	:	B
Flash point (IMDG)	:	7°C c.c.
Properties and observations (IMDG)	:	Colourless liquid with a benzene-like odour. Flashpoint: 7°C c.c. Explosive limits: 1.27% to 7% Immiscible with water.
MFAG-No	:	130

- Air transport

Transport regulations (IATA)	:	Subject to the provisions
PCA Excepted quantities (IATA)	:	E2
PCA Limited quantities (IATA)	:	Y341
PCA limited quantity max net quantity (IATA)	:	1L
PCA packing instructions (IATA)	:	353
PCA max net quantity (IATA)	:	5L
CAO packing instructions (IATA)	:	364
CAO max net quantity (IATA)	:	60L
ERG code (IATA)	:	3L

- Inland waterway transport

Classification code (ADN)	:	F1
Limited quantities (ADN)	:	1 L
Excepted quantities (ADN)	:	E2
Carriage permitted (ADN)	:	T
Equipment required (ADN)	:	PP, EX, A
Ventilation (ADN)	:	VE01
Number of blue cones/lights (ADN)	:	1

- Rail transport

Transport regulations (RID)	:	Subject
Classification code (RID)	:	F1
Limited quantities (RID)	:	1L
Excepted quantities (RID)	:	E2

Packing instructions (RID)	:	P001, IBC02, R001
Mixed packing provisions (RID)	:	MP19
Portable tank and bulk container instructions (RID)	:	T4
Portable tank and bulk container special provisions (RID)	:	TP1
Tank codes for RID tanks (RID)	:	LGBF
Transport category (RID)	:	2
Colis express (express parcels) (RID)	:	CE7
Hazard identification number (RID)	:	33

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

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Toluene is not on the REACH Candidate List

Toluene is not on the REACH Annex XIV List

VOC content	:	100 %

15.1.2. National regulations

Germany

VwVwS Annex reference	:	Water hazard class (WGK) 2, hazard to waters (Classification according to VwVwS, Annex 1 or 2; ID No. 194)
WGK remark	:	Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV	:	Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

Waterbezwaarlijkheid	:	1 - Black list substance
SZW-lijst van kankerverwekkende stoffen	:	The substance is not listed
SZW-lijst van mutagene stoffen	:	The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding	:	The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid	:	The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling	:	Toluene is listed

Denmark

Class for fire hazard	:	Class I-1
Store unit	:	1 liter
Classification remarks	:	F <Flam. Liq. 2>; Emergency management guidelines for the storage of flammable liquids must be followed
Recommendations Danish Regulation	:	Young people below the age of 18 years are not allowed to use the product Pregnant/breastfeeding women working with the product must not be in direct contact with the product The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
EC50	Median effective concentration
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Full text of H- and EUH-statements:	
Asp. Tox. 1	Aspiration hazard, Category 1
Flam. Liq. 2	Flammable liquids, Category 2
Repr. 2	Reproductive toxicity, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
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

SDS ISOLAB

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