

tert-Butanol

Safety Data Sheet

according to Regulation (EU) 2015/830

Date of issue: 05/04/2017 Version: 0.0

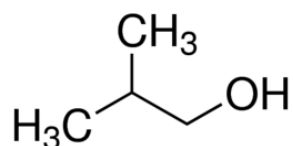
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
Substance name : tert-Butanol
EC Index-No. : 603-005-00-1
EC-No. : 200-889-7
CAS-No. : 75-65-0
Type of product : Pure substance
Formula : C₄H₁₀O
Chemical structure :



Synonyms : 1,1-dimethylethanol / 2-methylpropan-2-ol / 2-methylpropanol-2 / 2-propanol, 2-methyl- / Butanols / dimethylethanol / methanol, trimethyl- / NA1120 / pesticide code: 001505 / PST22630 / STCC4909130 / TBA (=tert-butyl alcohol) / t-butanol / t-butyl alcohol / t-butyl hydroxide / tert-butyl alcohol / tert-butyl hydroxide / tertiary-butanol / tertiary-butyl alcohol / tertiary-butyl hydroxide / trimethyl carbinol / trimethyl methanol / 2-methyl-2-propanol

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 : Laboratory chemical
Solvent
Fuel: additive
Chemical raw material
Cleaning product: component
Pesticide: component
Stabilizer

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
Acute Tox. 4 (Inhalation) H332
Eye Irrit. 2 H319
STOT SE 3 H335

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

Adverse physicochemical, human health and environmental effects

No additional information available

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2.2. Label elements

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

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

H225 - Highly flammable liquid and vapour
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H335 - May cause respiratory irritation

Precautionary statements (CLP) :

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P240 - Ground/bond container and receiving equipment.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P403+233 - 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	%
tert-Butanol	(CAS-No.) 75-65-0 (EC-No.) 200-889-7 (EC Index-No.) 603-005-00-1	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

: Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

First-aid measures after eye contact

: Rinse immediately with plenty of water. Do not apply neutralizing agents. 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 induce vomiting. 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

: Irritation of the respiratory tract. Irritation of the nasal mucous membranes. EXPOSURE TO HIGH CONCENTRATIONS: Central nervous system depression. Headache. Nausea. Dizziness. Mental confusion. Drunkenness. Narcosis. Disturbances of consciousness. Respiratory difficulties.

Symptoms/effects after skin contact

: Slight irritation. Red skin. Swelling of the skin.

Symptoms/effects after eye contact

: Redness of the eye tissue. Irritation of the eye tissue.

Symptoms/effects after ingestion

: AFTER ABSORPTION OF HIGH QUANTITIES: Risk of aspiration pneumonia. Vomiting. Abdominal pain. Symptoms similar to those listed under inhalation.

Chronic symptoms

: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Dry skin. Skin rash/inflammation. Affection of the renal tissue.

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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. Polyvalent foam. BC powder. Carbon dioxide.
Unsuitable extinguishing media : Solid water jet ineffective as extinguishing medium.

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 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. Protective clothing. Large spills/in enclosed spaces: compressed air apparatus. 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 spreading in sewers.

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 solid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute/disperse combustible gas/vapour with water curtain. Do not use compressed air for pumping over spills.
Methods for cleaning up : Take up liquid spill into absorbent material, e.g.: sand, earth, vermiculite or kieselguhr, powdered limestone. 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. Clean contaminated surfaces with an excess of water. 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. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe normal hygiene standards. 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: combustible materials. oxidizing agents. reducing agents. (strong) acids.

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Storage area	: Store at ambient temperature. Keep out of direct sunlight. Ventilation at floor level. Fireproof storeroom. Provide for a tub to collect spills. Unauthorized persons are not admitted. Keep only in the original container. Meet the legal requirements.
Special rules on packaging	: SPECIAL REQUIREMENTS: closing. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials	: SUITABLE MATERIAL: stainless steel. monel steel. iron. copper. nickel. bronze. MATERIAL TO AVOID: synthetic material.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

tert-Butanol (75-65-0)		
Austria	Local name	tert-Butanol
Austria	MAK (mg/m ³)	62 mg/m ³
Austria	MAK (ppm)	20 ppm
Austria	MAK Short time value (mg/m ³)	248 mg/m ³
Austria	MAK Short time value (ppm)	80 ppm
Austria	Remark (AT)	H
Belgium	Local name	Alcool tert-butylique # tert-Butanol
Belgium	Limit value (mg/m ³)	307 mg/m ³ (Alcool tert-butylique; Belgium; Time-weighted average exposure limit 8 h)
Belgium	Limit value (ppm)	100 ppm (Alcool tert-butylique; Belgium; Time-weighted average exposure limit 8 h)
Croatia	Local name	2-Metil-propan-2-ol; (Tert-butil-alkohol)
Croatia	GVI (granična vrijednost izloženosti) (mg/m ³)	308 mg/m ³
Croatia	GVI (granična vrijednost izloženosti) (ppm)	100 ppm
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (mg/m ³)	462 mg/m ³
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (ppm)	150 ppm
Croatia	Naznake (HR)	F (lako zapaljivo); Xn (Štetno)
Czech Republic	Local name	Butanol (všechny isomery)
Czech Republic	Expoziční limity (PEL) (mg/m ³)	300 mg/m ³
Czech Republic	Expoziční limity (PEL) (ppm)	100 ppm
Czech Republic	Expoziční limity (NPK-P) (mg/m ³)	600 mg/m ³
Czech Republic	Expoziční limity (NPK-P) (ppm)	200 ppm
Czech Republic	Remark (CZ)	D
Denmark	Local name	tert-Butylalkohol
Denmark	Grænseværdie (langvarig) (mg/m ³)	150 mg/m ³
Denmark	Grænseværdie (langvarig) (ppm)	50 ppm
Denmark	Anmærkninger (DK)	L (markerer, at grænseværdien er en loftværdi, som ikke på noget tidspunkt må overskrides); H (betyder, at stoffet kan optages gennem huden)
Estonia	Local name	v.a n-butanol
Estonia	OEL TWA (mg/m ³)	150 mg/m ³
Estonia	OEL TWA (ppm)	50 ppm
Estonia	OEL STEL (mg/m ³)	250 mg/m ³
Estonia	OEL STEL (ppm)	75 ppm
Finland	Local name	tert-Butanoli
Finland	HTP-arvo (8h) (mg/m ³)	150 mg/m ³
Finland	HTP-arvo (8h) (ppm)	50 ppm
Finland	HTP-arvo (15 min)	230 mg/m ³

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Finland	HTP-arvo (15 min) (ppm)	75 ppm
Finland	Huomautus (FI)	iho
France	Local name	Alcool tert-butylque
France	VME (mg/m ³)	300 mg/m ³ (Alcool tert-butylque; France; Time-weighted average exposure limit 8 h; VL: Valeur non réglementaire indicative)
France	VME (ppm)	100 ppm (Alcool tert-butylque; France; Time-weighted average exposure limit 8 h; VL: Valeur non réglementaire indicative)
France	Note (FR)	Valeurs recommandées/admises
Germany	Local name	2-Methylpropanol-2
Germany	TRGS 900 Occupational exposure limit value (mg/m ³)	62 mg/m ³
Germany	TRGS 900 Occupational exposure limit value (ppm)	20 ppm
Germany	Remark (TRGS 900)	DFG,Y
Greece	OEL TWA (mg/m ³)	300 mg/m ³
Greece	OEL TWA (ppm)	100 ppm
Greece	OEL STEL (mg/m ³)	450 mg/m ³
Greece	OEL STEL (ppm)	150 ppm
Ireland	Local name	2-Methylpropan-2-ol
Ireland	OEL (8 hours ref) (mg/m ³)	300 mg/m ³
Ireland	OEL (8 hours ref) (ppm)	100 ppm
Ireland	OEL (15 min ref) (mg/m ³)	450 mg/m ³
Ireland	OEL (15 min ref) (ppm)	150 ppm
Lithuania	Local name	2-metil-2-propanolis (tret-butilo alkoholis)
Lithuania	IPRV (mg/m ³)	150 mg/m ³
Lithuania	IPRV (ppm)	50 ppm
Lithuania	TPRV (mg/m ³)	250 mg/m ³
Lithuania	TPRV (ppm)	75 ppm
Lithuania	Remark (LT)	O (medžiaga į organizmą gali prasiskverbti pro nepažeistą odą); Ū (ūmus poveikis)
Poland	Local name	2-Metylopropan-2-ol (tert-butylowy alkohol)
Poland	NDS (mg/m ³)	300 mg/m ³
Poland	NDSch (mg/m ³)	450 mg/m ³
Portugal	Local name	terc-Butanol (Álcool terc-butílico)
Portugal	OEL TWA (ppm)	100 ppm
Slovakia	Local name	terc-Butanol
Slovakia	NPHV (priemerná) (mg/m ³)	62 mg/m ³
Slovakia	NPHV (priemerná) (ppm)	20 ppm
Slovakia	OEL STEL (mg/m ³)	250 mg/m ³
Slovakia	OEL STEL (ppm)	80 ppm
Slovenia	Local name	2-metil-2-propanol (terc-butilalkohol)
Slovenia	OEL TWA (mg/m ³)	62 mg/m ³
Slovenia	OEL TWA (ppm)	20 ppm
Slovenia	OEL STEL (mg/m ³)	248 mg/m ³
Slovenia	OEL STEL (ppm)	80 ppm
Spain	Local name	terc-Butanol (Alcohol terc-butílico)
Spain	VLA-ED (mg/m ³)	308 mg/m ³
Spain	VLA-ED (ppm)	100 ppm

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tert-Butanol (75-65-0)		
Spain	Notes	s (Esta sustancia tiene prohibida total o parcialmente su comercialización y uso como fitosanitario y/o como biocida. Para una información detallada acerca de las prohibiciones consúltese: Base de datos de productos biocidas: http://www.msssi.gob.es/ciudadanos/productos.do?tip o=plaguicidas Base de datos de productos fitosanitarios http://www.magrama.gob.es/agricultura/pags/fitos/regi stro/fichas/pdf/Lista_sa.pdf).
Sweden	Local name	tert-Butanol
Sweden	nivågränsvärde (NVG) (mg/m ³)	150 mg/m ³
Sweden	nivågränsvärde (NVG) (ppm)	50 ppm
Sweden	kortidsvärde (KTV) (mg/m ³)	250 mg/m ³
Sweden	kortidsvärde (KTV) (ppm)	75 ppm
Sweden	Anmärkning (SE)	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); V (Väglödande korttidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas)
United Kingdom	Local name	2-Methylpropan-2-ol
United Kingdom	WEL TWA (mg/m ³)	308 mg/m ³ 2-Methylpropan-2-ol; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
United Kingdom	WEL TWA (ppm)	100 ppm 2-Methylpropan-2-ol; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
United Kingdom	WEL STEL (mg/m ³)	462 mg/m ³ 2-Methylpropan-2-ol; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
United Kingdom	WEL STEL (ppm)	150 ppm 2-Methylpropan-2-ol; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
Russian Federation	Local name	2-Метилпропан-2-ол
Russian Federation	OEL Ceiling (mg/m ³)	10 mg/m ³
Russian Federation	Remark (RU)	3 класс опасности - опасное; п (пары и/или газы)
Norway	Local name	2-metyl-2-propanol
Norway	Greenseverdier (AN) (mg/m ³)	75 mg/m ³
Norway	Greenseverdier (AN) (ppm)	25 ppm
Norway	Merknader (NO)	H (Kjemikalier som kan tas opp gjennom huden); T (Takverdi er en øyeblikksverdi som angir maksimalkonsentrasjon av et kjemikalie i pustesonen som ikke skal overskrides)
Switzerland	Local name	tert-Butanol
Switzerland	VME (mg/m ³)	60 mg/m ³
Switzerland	VME (ppm)	20 ppm
Switzerland	VLE (mg/m ³)	240 mg/m ³
Switzerland	VLE (ppm)	80 ppm
Switzerland	Remark (CH)	SS _c - ZNS, Niere ^{KT AN} - NIOSH
Australia	Local name	tert-Butyl alcohol
Australia	TWA (mg/m ³)	303 mg/m ³ Synonym (tert-Butanol; 2-Methylpropan-2-ol)
Australia	TWA (ppm)	100 ppm Synonym (tert-Butanol; 2-Methylpropan-2-ol)
Australia	STEL (mg/m ³)	455 mg/m ³ Synonym (tert-Butanol; 2-Methylpropan-2-ol)
Australia	STEL (ppm)	150 ppm Synonym (tert-Butanol; 2-Methylpropan-2-ol)
USA - ACGIH	Local name	tert-Butanol

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tert-Butanol (75-65-0)		
USA - ACGIH	ACGIH TWA (ppm)	100 ppm (tert-Butanol; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
USA - ACGIH	Remark (ACGIH)	CNS impair
USA - OSHA	Local name	tert-Butyl alcohol
USA - OSHA	OSHA PEL (TWA) (mg/m ³)	300 mg/m ³
USA - OSHA	OSHA PEL (TWA) (ppm)	100 ppm

8.2. Exposure controls

Materials for protective clothing:

GIVE EXCELLENT RESISTANCE: butyl rubber, polyethylene/ethylenevinylalcohol. GIVE GOOD RESISTANCE: No data available. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: PVC, viton

Hand protection:

Gloves

Eye protection:

Safety glasses

Skin and body protection:

Protective clothing

Respiratory protection:

Wear gas mask with filter type A 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	: 74.12 g/mol
Colour	: Colourless to white.
Odour	: Strong odour. Alcohol odour. Camphor odour.
Odour threshold	: 957 ppm 2900 mg/m ³
pH	: 7
Relative evaporation rate (butylacetate=1)	: 1.05
Relative evaporation rate (ether=1)	: 11
Melting point	: 24 - 25 °C
Freezing point	: No data available
Boiling point	: 81 - 83 °C (1013 hPa)
Flash point	: 11 °C
Critical temperature	: 233 °C
Auto-ignition temperature	: 478 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: 41 hPa (20 °C)
Vapour pressure at 50 °C	: 240 hPa (50 °C)
Critical pressure	: 39710 hPa
Relative vapour density at 20 °C	: 2.6
Relative density	: 0.79
Relative density of saturated gas/air mixture	: 1.06
Density	: 0.78 g/cm ³ (20 °C)
Solubility	: Soluble in water. Soluble in ethanol. Soluble in ether. Soluble in chloroform. Soluble in aromatic hydrocarbons. Soluble in aliphatic hydrocarbons. Water: (20 °C, Not applicable) Ethanol: Complete Ether: Complete

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Log Pow	: 0.35 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Viscosity, kinematic	: No data available
Viscosity, dynamic	: 0.0043 Pa.s (25 °C)
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 2.3 - 8.0 %(V)

9.2. Other information

Specific conductivity	: 27 µS/m
Saturation concentration	: 122 g/m ³
VOC content	: 100 %
Other properties	: Gas/vapour heavier than air at 20°C. Volatile. Substance has neutral reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

Decomposes on exposure to temperature rise: release of highly flammable gases/vapours. Upon combustion: CO and CO₂ are formed. Reacts violently with many compounds e.g.: with (strong) oxidizers, with (strong) reducers and with (strong) acids: (increased) risk of fire/explosion.

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 : Inhalation: Harmful if inhaled.

tert-Butanol (75-65-0)	
LD50 oral rat	2,733 mg/kg (Rat; Literature study)
LD50 dermal rabbit	> 2000 mg/kg (Rabbit; Literature study)
LC50 inhalation rat (ppm)	> 10000 ppm/4h (Rat; Literature study)

Skin corrosion/irritation	: Not classified pH: 7
Serious eye damage/irritation	: Causes serious eye irritation. pH: 7
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: May cause respiratory irritation.
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Classification concerning the environment: not applicable.
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.

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Ecology - water : Ground water pollutant. Not harmful to fishes (LC50(96h) >1000 mg/l). Slightly harmful to invertebrates (Daphnia) (EC50 (48h): 100 - 1000 mg/l). Not harmful to algae (EC50 (72h) >1000 mg/l). Inhibition of activated sludge.

tert-Butanol (75-65-0)	
LC50 fish 2	6410 mg/l (LC50; 96 h; Pimephales promelas)
EC50 Daphnia 1	933 mg/l (EC50; EU Method C.2; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)

12.2. Persistence and degradability

tert-Butanol (75-65-0)	
Persistence and degradability	Not readily biodegradable in water. No (test)data on mobility of the substance available.
Biochemical oxygen demand (BOD)	0 g O ₂ /g substance
Chemical oxygen demand (COD)	2.18 g O ₂ /g substance
ThOD	2.59 g O ₂ /g substance
BOD (% of ThOD)	0

12.3. Bioaccumulative potential

tert-Butanol (75-65-0)	
BCF fish 1	< 5 (BCF)
BCF fish 2	1 (BCF)
Log Pow	0.35 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

tert-Butanol (75-65-0)	
Surface tension	0.02 N/m (25 °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. Incinerate under surveillance with energy recovery. Do not discharge into drains or the environment. May be discharged to wastewater treatment installation.

Additional information : LWCA (the Netherlands): KGA category 06. 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				
1120	1120	1120	1120	1120
14.2. UN proper shipping name				
BUTANOLS	BUTANOLS	Butanols	BUTANOLS	BUTANOLS
Transport document description				
UN 1120 BUTANOLS, 3, II, (D/E)	UN 1120 BUTANOLS, 3, II	UN 1120 Butanols, 3, II	UN 1120 BUTANOLS, 3, II	UN 1120 BUTANOLS, 3, II
14.3. Transport hazard class(es)				
3	3	3	3	3

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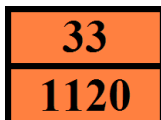


ADR	IMDG	IATA	ADN	RID
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Classification code (ADR)	: F1
Limited quantities (ADR)	: 1I
Excepted quantities (ADR)	: E2
Packing instructions (ADR)	: P001, IBC02, R001
Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T4
Portable tank and bulk container special provisions (ADR)	: TP1, TP29
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

- 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, TP29
EmS-No. (Fire)	: F-E
EmS-No. (Spillage)	: S-D
Stowage category (IMDG)	: B
Properties and observations (IMDG)	: Colourless liquids with a disagreeable odour. Explosive limits: normal-BUTANOL 1.4% to 11.2%. secondary-BUTANOL 1.7% to 9.8%. tertiary-BUTANOL 2.4% to 8%. tertiary-BUTANOL solidifies at about 25°C. normal-BUTANOL is immiscible with water. secondary-BUTANOL is immiscible with water. tertiary-BUTANOL is miscible with water. Irritating to skin, eyes and mucous membranes.
MFAG-No	: 129

- 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

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PCA packing instructions (IATA)	: 353
PCA max net quantity (IATA)	: 5L
CAO packing instructions (IATA)	: 364
CAO max net quantity (IATA)	: 60L
Special provisions (IATA)	: A3
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, TP29
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

tert-Butanol is not on the REACH Candidate List

tert-Butanol is not on the REACH Annex XIV List

VOC content : 100 %

15.1.2. National regulations

Germany

VwVwS Annex reference : Water hazard class (WGK) 1, low hazard to waters (Classification according to VwVwS, Annex 1 or 2; ID No. 219)

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

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

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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 : The substance is not 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
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
PBT	Persistent Bioaccumulative Toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative

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:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 2	Flammable liquids, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H225	Highly flammable liquid and vapour
H319	Causes serious eye irritation
H332	Harmful if inhaled
H335	May cause respiratory irritation

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