

tert-Butanol

19460-1L

Version 1.6

Revision Date 01.07.2021


2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Flammable liquids Category 2
H225 Highly flammable liquid and vapour.
Acute toxicity Category 4 - Inhalation
H332 Harmful if inhaled.
Eye irritation Category 2
H319 Causes serious eye irritation.
Specific target organ toxicity - single exposure Category 3 - Central nervous system
H336 May cause drowsiness or dizziness.
Specific target organ toxicity - single exposure Category 3 - Respiratory system
H335 May cause respiratory irritation.

2.2. Label elements

REGULATION (EC) No 1272/2008

Hazard pictograms	:	
Signal word	:	Danger
Hazard statements	:	H225 Highly flammable liquid and vapour. H319 Causes serious eye irritation. H332 Harmful if inhaled. H335 May cause respiratory irritation. H336 May cause drowsiness or dizziness.
Precautionary statements	:	P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray. P280 Wear protective gloves/protective clothing/eye protection/face protection. P284 Wear respiratory protection. P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308 + P313 IF exposed or concerned: Get medical advice/ attention.

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2.3. Other hazards

Vapours may form explosive mixtures with air. Results of PBT and vPvB assessment, see chapter 12.5.

SECTION 3: Composition/information on ingredients

3.1. Substance

Chemical name	CAS-No. Index-No. REACH Registration Number EC-No.	Classification 1272/2008	Concentration	Remarks
2-methylpropan-2-ol; tert-butyl alcohol	75-65-0 603-005-00-1 200-889-7	Flam. Liq. 2; H225 Acute Tox. 4; H332; Inhalation Eye Irrit. 2; H319 STOT SE 3; H336; Central nervous system STOT SE 3; H335; Respiratory system	100 %	

3.2. Mixture

Not applicable

Occupational Exposure Limit(s), if available, are listed in Section 8.
For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice:

First aider needs to protect himself. Move out of dangerous area. Take off all contaminated clothing immediately.

Inhalation:

If inhaled, remove to fresh air. Consult a physician.

Skin contact:

After contact with skin, wash immediately with plenty of water. Call a physician if irritation develops or persists.

Eye contact:

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Protect unharmed eye. Remove contact lenses. Call a physician immediately.

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Ingestion:

When swallowed, allow water to be drunk. Call a physician immediately.

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

No data available

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

Treat symptomatically.

See Section 11 for more detailed information on health effects and symptoms.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water spray
Foam
Carbon dioxide (CO₂)
Dry powder

Extinguishing media which shall not be used for safety reasons:

High volume water jet

5.2. Special hazards arising from the substance or mixture

Vapours are heavier than air and may spread along floors.
Flash back possible over considerable distance.
In case of fire hazardous decomposition products may be produced such as:
carbon oxides (CO, CO₂).

5.3. Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.
Do not use a solid water stream as it may scatter and spread fire. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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Use personal protective equipment. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Should not be released into the environment.

6.3. Methods and materials for containment and cleaning up

Soak up with inert absorbent material.
Pick for disposal in tightly closed containers

6.4. Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling:

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Exhaust ventilation at the object is necessary.

Advice on protection against fire and explosion:

Vapours may form explosive mixture with air. Keep away from heat and sources of ignition. Take measures to prevent the build up of electrostatic charge. Normal measures for preventive fire protection.

Hygiene measures:

Separate rooms are required for washing, showering and changing clothes. Take off all contaminated clothing immediately. Wash hands before breaks and at the end of workday. When using, do not eat, drink or smoke. Avoid contact with the skin and the eyes.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers:

Store in original container. Keep container tightly closed in a dry and well-ventilated place. Store in area designed for storage of flammable liquids. Protect from physical damage. Recommended storage temperature: room temperature. (Ambient temperature: $> 0 < 35^{\circ}\text{C}$)

7.3. Specific end use(s)

no additional data available

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits:

Components	Basis / Value type	Value / Form of exposure	Exceeding Factor	Remarks
2-methylpropan-2-ol; tert-butyl alcohol	EH40 WEL			Listed
2-methylpropan-2-ol; tert-butyl alcohol	EH40 WEL TWA	308 mg/m ³ 100 ppm		
2-methylpropan-2-ol; tert-butyl alcohol	EH40 WEL STEL	462 mg/m ³ 150 ppm		

TWA - Time weighted average

STEL - Short term exposure limit

DNEL/ PNEC-Values

Component	End-use/impact	Exposure duration	Value	Exposure routes	Remarks
2-methylpropan-2-ol; tert-butyl alcohol	Workers / Acute systemic effects		240 mg/m ³	Inhalation	
2-methylpropan-2-ol; tert-butyl alcohol	Workers / Long-term systemic effects		139 mg/kg	Skin contact	
2-methylpropan-2-ol; tert-butyl alcohol	Workers / Long-term systemic effects		49 mg/m ³	Inhalation	

Component	Environmental compartment / Value	Remarks
2-methylpropan-2-ol; tert-butyl alcohol	Fresh water: 6,64 mg/l	
2-methylpropan-2-ol; tert-butyl alcohol	Marine water: 0,664 mg/l	
2-methylpropan-2-ol; tert-butyl alcohol	Fresh water sediment: 5,8 mg/kg	

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2-methylpropan-2-ol; tert-butyl alcohol	Soil: 1 mg/kg	
2-methylpropan-2-ol; tert-butyl alcohol	Sewage treatment plant: 690 mg/l	
2-methylpropan-2-ol; tert-butyl alcohol	Oral: 88,7 mg/kg	
2-methylpropan-2-ol; tert-butyl alcohol	Water: 9,33 mg/l	

8.2. Exposure controls

Occupational exposure controls

The Personal Protective Equipment must be in accordance with EN standards:respirator EN 136, 140, 149; safety glasses EN 166; protective suit: EN 340, 463, 468, 943-1, 943-2; gloves EN 374, 511; safety shoes EN-ISO 20345.

Ensure that eyewash stations and safety showers are close to the workstation location.

Engineering measures

Use with local exhaust ventilation.

Prevent vapour buildup by providing adequate ventilation during and after use.

Personal protective equipment

Respiratory protection:

In the case of vapour formation use a respirator with an approved filter.

Hand protection:

Glove material: Nitrile rubber

Break through time: > 480 min

Glove thickness: 0,4 mm

Camatril® 730

Gloves must be inspected prior to use.

Replace when worn.

Remarks:Supplementary note: The specifications are based on information and tests from similar substances by analogy.

Due to varying conditions (e.g.temperature or other strains) it must be considered that the usage of a chemical protective glove in practice may be much shorter than the permeation time determined in accordance with EN 374.

Since actual conditions of practical use often deviate from standardised conditions according EN 374 the glove manufacturer recommends to use the chemical protective glove in practice not longer than 50% of the recommended permeation time.

Manufacturer´s directions for use should be observed because of great diversity of types .

Suitable gloves tested according EN 374 are supplied e.g. from KCL GmbH, D-36124 Eichenzell, Vertrieb@kcl.de

Eye protection:

Safety goggles

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Skin and body protection:
Protective suit

Environmental exposure controls

Handle in accordance with local environmental regulations and good industrial practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: liquid
Colour	: colourless
Odour	: characteristic
molecular weight	: 74,12 g/mol
Melting point/freezing point	: ca. 25 °C at 1.013,25 hPa
Boiling point/boiling range	: 81 - 83 °C at 1.013 hPa
Flammability	: highly flammable
Upper explosion limit	: 8 %(V)
Lower explosion limit	: 2,4 %(V)
Flash point	: 15 °C at 1.013,25 hPa Method: closed cup
Auto-ignition temperature	: 470 °C Method: DIN 51794
pH	: No data available
Viscosity, kinematic	: 5,72 mm ² /s at 25 °C Method: OECD Test Guideline 114
Viscosity, kinematic	: 2,23 mm ² /s at 45 °C

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	Method: OECD Test Guideline 114
Water solubility	: completely miscible
Partition coefficient: n-octanol/water	: log Pow 0,32 at: 20 °C Method: OECD Test Guideline 107
Vapour pressure	: ca. 54 hPa at 25 °C
Density	: 0,79 g/cm ³ at 20 °C
Relative vapour density	: No data available

9.2 Other Information

Evaporation rate	: No data available
Viscosity, dynamic	: No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

No decomposition if used as directed.

10.3. Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4. Conditions to avoid

Heat, flames and sparks.

10.5. Incompatible materials

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Strong oxidizing agents
Strong acids
Alkali metals

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity:

LD50

Species: Rat

Value: 3.046 mg/kg

Method: OPPTS 870.1100

Acute dermal toxicity:

LD50

Species: Rabbit

Value: > 2.000 mg/kg

Method: OPPTS 870.1200

Acute inhalation toxicity:

Classification based on Annex VI of regulation 1272/2008/EC.

Skin irritation:

Species: Rabbit

Result: slight irritation

Eye irritation:

Species: Rabbit

Result: Irritating to eyes.

Respiratory or skin sensitisation:

Species: Guinea pig

Result: Not a skin sensitizer.

Method: OECD Test Guideline 406

Carcinogenicity:

Note: Not classified due to data which are conclusive although insufficient for classification.

Germ cell mutagenicity:

Note: Not classified due to data which are conclusive although insufficient for classification.

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Reproductive toxicity:

Remarks: Not classified due to data which are conclusive although insufficient for classification.

Aspiration hazard:

Not classified due to data which are conclusive although insufficient for classification.

11.2. Information on other hazards

Endocrine disrupting properties

No data available

Other information:

Solvent removes skin oil from the skin.

Solvent vapours have a narcotic effect if inhaled in high concentrations.

SECTION 12: Ecological information

12.1. Toxicity

Toxicity to fish:

LC50

Species: Pimephales promelas (fathead minnow)

Value: 6.410 mg/l

Exposure time: 96 h

NOEC

Species: Clarias Gariepinus

Value: 332 mg/l

Exposure time: 120 h

Toxicity to aquatic plants:

EC50

Species: Desmodesmus subspicatus (green algae)

Value: > 1.000 mg/l

Exposure time: 72 h

EC50

Species: Pseudokirchneriella subcapitata (green algae)

Value: > 976 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 201

Toxicity to Microorganisms:

EC10

Species: Pseudomonas putida

Value: 6.900 mg/l

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Exposure time: 16 h
Method: DIN 38412

Toxicity to aquatic invertebrates:

EC50

Species: Daphnia magna (Water flea)

Value: 933 mg/l

Exposure time: 48 h

Chronic toxicity to aquatic invertebrates:

NOEC

Species: Daphnia magna (Water flea)

Value: 100 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

12.2. Persistence and degradability

Biodegradability:

Inherently biodegradable.

12.3. Bioaccumulative potential

No data available

12.4. Mobility in soil

No data available

12.5. Results of PBT and vPvB assessment

No data available

12.6. Endocrine disrupting properties

No data available

12.7. Other adverse effects

Should not be released into the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product:

Dispose according to legal requirements.

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Packaging:

Legal requirements are to be considered in regard of reuse or disposal of used packaging materials

Further information:

Provisions relating to waste:
EC Directive 2006/12/EC; 2008/98/EEC
Regulation No. 1013/2006

For personal protection see section 8.

SECTION 14: Transport information

14.1 UN number

ADR/RID:1120

IMDG:1120

IATA:1120

14.2 UN proper shipping name

ADR/RID:BUTANOLS

IMDG:BUTANOLS

IATA:Butanols

14.3 Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

14.5 Environmental hazards

ADR/RID:no

Marine pollutant: no

14.6 Special precautions for user

No data available

14.7 Maritime transport in bulk according to IMO instruments

No data available

SECTION 15: Regulatory information

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

Basis	Value	Remarks
Directive 2012/18/EC SEVESO III Listed in Regulation : P5c: FLAMMABLE LIQUIDS	Quantity: 5.000.000 kg Quantity: 50.000.000 kg	

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Substances of very high concern (SVHC)		This product does not contain substances of very high concern according to Regulation (EC) No Article 57 above the respective regulatory 1907/2006 (REACH), concentration limit of $\geq 0.1\%$ (w/w).
Regulation (EC) No. 1907/2006, Annex XIV		Not listed
Regulation (EC) No. 1907/2006, Annex XVII		Not listed

Poison Control Center

Country	Phone Number
Austria	+4314064343
Belgium	070 245245
Bulgaria	(+35929154233
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Cyprus	+357 2240 5611
Czech Republic	+420224919293; +420224915402
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Estonia	16662; (+372)6269390
Finland	9471977
France	+33(0)145425959
Greece	+30 210 779 3777
Hungary	(+36-80)201-199
Iceland	5432222
Ireland	+353(1)8092166
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	Erfurt : 0361/730730
	Freiburg : 0761/19240

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Switzerland	145
United Kingdom	(+44) 844 892 0111

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	Göttingen : 0551/19240
	Homburg : 06841/19240
	Mainz : 06131/19240
	Munich : 089/19240
Latvia	+37167042473

Other inventory information

US. Toxic Substances Control Act
On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act
On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)
All components of this product are on the Canadian DSL

Japan. Kashin-Hou Law List
On the inventory, or in compliance with the inventory

Korea. Existing Chemicals Inventory (KECI)
On the inventory, or in compliance with the inventory

Philippines. Inventory of Chemicals and Chemical Substances (PICCS)
On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances (IECSC)
On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand
On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Text of H-statements referred to under heading 3

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2-methylpropan-2-ol; tert-butyl alcohol : H225 Highly flammable liquid and vapour.
H332 Harmful if inhaled.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.
H335 May cause respiratory irritation.

Further information

All directives and regulations refer to amended versions.
Vertical lines in the left hand margin indicate a relevant amendment from the previous version.

Abbreviations:

EC European Community
CAS Chemical Abstracts Service
DNEL Derived no effect level
PNEC Predicted no effect level
vPvB Very persistent and very bioaccumulative substance
PBT Persistent, bioaccumulative and toxic substance

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. Final determination of suitability of any material is the sole responsibility of the user.

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