

t-Butanol**SECTION 1. IDENTIFICATION**

Product Identifier	t-Butanol
Other Means of Identification	2-Methyl-2-propanol, Dimethylethanol, tert-Butyl alcohol
Product Code(s)	BU2610
Product Family	Organic solution
Recommended Use	Laboratory and industrial use.
Restrictions on Use	None known.
Supplier Identifier	Alphachem Limited, 2485 Milltower Court, Mississauga, Ontario, L5N 5Z6, (905) 821-2995
Emergency Phone No.	CANUTEC CANADA, 613-996-6666, 24 Hours
SDS No.	0638

SECTION 2. HAZARD IDENTIFICATION

Classified according to Canada's Hazardous Products Regulations (WHMIS 2015) and the US Hazard Communication Standard (HCS 2012).

Classification

Flammable liquid - Category 2; Eye irritation - Category 2B; Specific target organ toxicity (single exposure) - Category 3

Label Elements

Signal Word:
Danger

Hazard Statement(s):

Extremely flammable liquid and vapour.
May cause respiratory irritation.
Causes eye irritation.

Precautionary Statement(s):

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Keep container tightly closed.
Ground and bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting//equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wash hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.

Response:

IF ON SKIN: Wash with plenty of water/

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

Storage:

Store in a well-ventilated place. Keep container tightly closed.

Disposal:

Dispose of contents and container in accordance with local, regional, national and international regulations.

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance:

Chemical Name	CAS No.	%	Other Identifiers
tert-Butanol	75-65-0	> 99	2-Methyl-2-propanol, Dimethylethanol, tert-Butyl alcohol

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Keep at rest in a position comfortable for breathing. Call a Poison Centre or doctor if you feel unwell.

Skin Contact

Rinse with lukewarm, gently flowing water for 5 minutes. If skin irritation occurs, get medical advice or attention.

Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. If eye irritation persists, get medical advice or attention.

Ingestion

Rinse mouth with water. Do not induce vomiting. Immediately call a Poison Centre or doctor.

First-aid Comments

All first aid procedures should be periodically reviewed by a doctor familiar with the material and its condition of use in the workplace. Get medical advice or attention if you feel unwell or are concerned.

Most Important Symptoms and Effects, Acute and Delayed

None known.

Immediate Medical Attention and Special Treatment

Special Instructions

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Special "alcohol resistant fire-fighting foams". Use water to keep non-leaking, fire-exposed containers cool.

Unsuitable Extinguishing Media

Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific Hazards Arising from the Product

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Flammable liquid and vapour. Can ignite at room temperature. Releases vapour that can form explosive mixture with air. Can be ignited by static discharge. May travel a considerable distance to a source of ignition and flash back to a leak or open container. Heating increases the release of toxic vapour. May accumulate in hazardous amounts in low-lying areas especially inside confined spaces, resulting in a fire and/or health hazard. Closed containers may rupture violently when heated releasing contents.

In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide.

Special Protective Equipment and Precautions for Fire-fighters

Evacuate area. Fight fire from a safe distance or a protected location. Approach fire from upwind to avoid hazardous vapours or gases. Stop leak before attempting to put out the fire. Product could form an explosive mixture and reignite. If the leak cannot be stopped, let the fire burn itself out. Knock down vapours or gases with water fog or fine water spray. Use water spray to dilute spills to non-flammable mixtures. Use water spray to flush spills away from ignition sources. For a massive fire, immediately evacuate the area and use unmanned hose holder or monitor nozzles. Fire-fighters may enter the area if positive pressure SCBA and full Bunker Gear is worn.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet. Eliminate all ignition sources if safe to do so. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Remove or isolate incompatible materials as well as other hazardous materials.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Stop or reduce leak if safe to do so.

Small spills or leaks: contain and soak up spill with absorbent that does not react with spilled product. Place used absorbent into suitable, covered, labelled containers for disposal. Flush spill area.

Large spills or leaks: contain spill with earth, sand, or absorbent material which does not react with spilled material. Collect using shovel/scoop or approved HEPA vacuum and place in a suitable container for disposal. Flush spill area.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Avoid generating vapours or mists. Only use where there is adequate ventilation. Eliminate heat and ignition sources such as sparks, open flames, hot surfaces and static discharge. Post "No Smoking" signs. Wear personal protective equipment to avoid direct contact with this chemical. Prevent accidental contact with incompatible chemicals. Use non-sparking tools. Electrically bond and ground equipment. Ground clips must contact bare metal. Keep containers tightly closed when not in use or empty. Wash hands thoroughly after handling this material.

Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated, out of direct sunlight and away from heat and ignition sources, separate from incompatible materials (see Section 10: Stability and Reactivity). Protect from conditions listed in Conditions to Avoid in Section 10 (Stability and Reactivity). Electrically bond and ground containers. Ground clips must contact bare metal. Store in a closed container.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
tert-Butanol	100 ppm A4		100 ppm			

A4 = Not classifiable as a human carcinogen.

Appropriate Engineering Controls

Use local exhaust ventilation and enclosure, if necessary, to control amount in the air. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored. Exhaust directly to the outside, taking any necessary precautions for environmental protection.

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Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.

Suitable materials are: butyl rubber, neoprene rubber, nitrile rubber, Viton®/butyl rubber, Barrier® (PE/PA/PE), Silver Shield/4H® (PE/EVAL/PE), Tychem® Responder.

The following materials should NOT be used: natural rubber.

Respiratory Protection

Wear a NIOSH approved air-purifying respirator with an organic vapour cartridge.

Wear a NIOSH approved air-purifying respirator with an appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Colourless liquid.
Odour	Not available
Odour Threshold	Not available
pH	Not available
Melting Point/Freezing Point	25.8 °C (78.4 °F) (melting); 25.8 °C (78.4 °F) (freezing)
Initial Boiling Point/Range	82.4 °C (180.3 °F)
Flash Point	11.1 °C (52.0 °F) (closed cup)
Evaporation Rate	1.05 (n-butyl acetate = 1)
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	8.0% (upper); 2.4% (lower)
Vapour Pressure	4 kPa (30 mm Hg)
Vapour Density (air = 1)	2.55
Relative Density (water = 1)	0.787 at 20 °C
Solubility	Soluble in all proportions in water; Soluble in all proportions in alcohols (e.g. ethanol).
Partition Coefficient, n-Octanol/Water (Log Kow)	0.35
Auto-ignition Temperature	478 °C (892 °F)
Decomposition Temperature	Not available
Viscosity	5.52 mm ² /s at 25 °C (calculated) (kinematic); 4.31 mPa.s at 25 °C (dynamic)
Other Information	
Physical State	Liquid

SECTION 10. STABILITY AND REACTIVITY

Reactivity

None known.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None known.

Conditions to Avoid

Open flames, sparks, static discharge, heat and other ignition sources.

Incompatible Materials

Strong oxidizing agents (e.g. perchloric acid), metals (e.g. aluminum), strong acids (e.g. hydrochloric acid).

Hazardous Decomposition Products

None known.

SECTION 11. TOXICOLOGICAL INFORMATION**Likely Routes of Exposure**

Inhalation; skin contact; eye contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
tert-Butanol	Not available	3500 mg/kg (rat)	Not available

Skin Corrosion/Irritation

Animal tests show very mild irritation.

Serious Eye Damage/Irritation

Animal tests show mild irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure**Inhalation**

At high concentrations may cause nose and throat irritation.

Skin Absorption

tert-Butanol:

Ingestion

May cause depression of the central nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion.

Aspiration Hazard

No information was located.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause dermatitis. Symptoms may include dry, red, cracked skin (dermatitis).

Respiratory and/or Skin Sensitization

No information was located for respiratory sensitization. No information was located for skin sensitization.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
tert-Butanol	Not evaluated	A4	Not Listed	Not Listed

A4 – Not classifiable as a human carcinogen.

Reproductive Toxicity**Development of Offspring**

No information was located.

Sexual Function and Fertility

No information was located.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

No information was located.

Interactive Effects

No information was located.

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SECTION 12. ECOLOGICAL INFORMATION

This section is not required by WHMIS. This section is not required by OSHA HCS 2012.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of contents and container in accordance with local, regional, national and international regulations.

SECTION 14. TRANSPORT INFORMATION

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
US DOT	UN1120	Butanols	3	III
Canadian TDG	UN1120	Butanols	3	III

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

Listed on the DSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

Listed on the TSCA Inventory.

SECTION 16. OTHER INFORMATION

NFPA Rating Health - 2 Flammability - 3 Instability - 0

SDS Prepared By Alphachem Limited

Phone No. (905)-821-2995

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References CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS).

Disclaimer This document is offered only as a guide in the safe handling of the above product, and has been prepared from the best information currently available. It is not intended to be all-inclusive and the conditions of use may involve other additional considerations. Since Alphachem Limited cannot anticipate or control the conditions under which the product may be used, it will not be liable for any claims, damages or losses which may result from the use or reliance on any information herein.

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