

SAFETY DATA SHEET

Butyl Alcohol, tert-

1. IDENTIFICATION OF SUBSTANCE / MIXTURE AND OF SUPPLIER

Product Identifier: High Purity Chemicals
Synonyms: t-butyl alcohol; t-butanol; tert-butanol; 2-methyl-2-propanol; 2-methylpropan-2-ol; 1,1-dimethylethanol; trimethylcarbinol; trimethyl methanol
Other means of identification: CAS No. 75-65-0
EINECS No. 200-889-7

Recommended use of the chemical and restrictions on use:

Supplier Details:

Greenfield Global USA, Inc.
58 Vale Road, Brookfield,
CT 06804, USA.
Tel: 203.740.3471
Fax: 203.740.3481
CCN17213

Greenfield Global USA, Inc.
1101 Isaac Shelby Drive, Shelbyville,
KY 40065, USA.
Tel: 502.232.7600
Fax: 502.633.6100
CCN17213

Emergency Contact: CHEMTREC: 1.800.424.9300 (USA) / +1.703.527.3887 (International)

2. HAZARDS IDENTIFICATION

Emergency Overview:

WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED OR INHALED. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. MAY CAUSE IRRITATION TO SKIN. MAY AFFECT LIVER AND KIDNEYS.

OSHA Hazards:

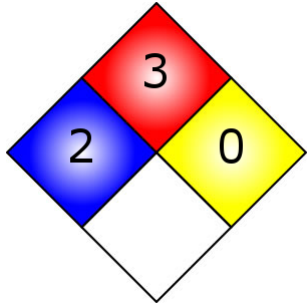
Flammable liquid, Irritant, Target organ effect

Target Organs:

Bladder, Central nervous system, Kidney, Liver, Thyroid



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NFPA +1.703.527.3887 (INT)



GHS label elements, including precautionary statements



Signal Word:
DANGER!

Hazard statement(s)

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

Precautionary statement(s)

P210	Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
P264	Wash hands thoroughly after handling.
P337 + P313	If eye irritation persists: Get medical attention.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves and eye and face protection.
P312	Call a POISON CENTER or doctor/ physician if you feel unwell.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P405	Store locked up.
P233	Keep container tightly closed.
P501	Dispose of contents and container to an approved waste disposal plant.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical, ventilating, and lighting equipment.



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P242	Use only non-sparking tools.	+1.703.527.3887 (INT)
P243	Take precautionary measures against static discharge.	
P261	Avoid breathing dust/fumes/gas/mist/vapors.	
P303 + P361 + P353	IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water.	
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position 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. Seek medical attention.	
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.	
P403 + P235	Store in a well-ventilated place. Keep cool.	

GHS Classification(s)

- Acute Toxicity, Inhalation (Category 4)
- Eye irritation (Category 2)
- Flammable Liquids (Category 2)
- Specific target organ toxicity - single exposure (Category 3)

Other hazards which do not result in classification:

Potential Health Effects:

Organ	Description
Eyes	Causes eye irritation.
Ingestion	May be harmful if swallowed.
Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	May be harmful if absorbed through skin. Causes skin irritation.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical identity:	tert-Butanol
Common name / Synonym:	t-butyl alcohol; t-butanol; tert-butanol; 2-methyl-2-propanol; 2-methylpropan-2-ol; 1,1-dimethylethanol; trimethylcarbinol; trimethyl methanol
CAS number:	75-65-0
EINECS number:	200-889-7
ICSC number:	0114
RTECS #:	EO1925000
UN #:	UN1120
EC #:	603-005-00-1

% Weight	Material	CAS
100	tert-Butyl Alcohol	75-65-0

4. FIRST AID MEASURES

General advice

Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Skin

Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing/shoes.

Inhalation

Remove person to fresh air. If signs/symptoms continue, get medical attention. Give oxygen or artificial respiration as needed.

Eyes

Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation persists, seek medical attention.

Ingestion

DO NOT induce vomiting. If vomiting does occur, have victim lean forward to prevent aspiration. Rinse mouth with water. Seek medical attention. Never give anything by mouth to an unconscious individual.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

Carbon oxides expected to be the primary hazardous combustion product.

Special protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Keep unopened containers cool by spraying with water.

Unusual Fire and Explosion Hazards:

- Vapors may travel to source of ignition and flash back.

Flammable Properties

Classification

OSHA/NFPA Class IB Flammable Liquid.

Flash point

11 °C (52 °F) - closed cup

Autoignition temperature



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478 °C (892 °F) **+1.703.527.3887 (INT)**

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Wear respiratory protection. Do not inhale vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions:

Stop leak. Contain spill if possible and safe to do so. Prevent product from entering drains.

Methods and materials for containment and cleaning up:

Contain spill, then collect with an electrically protected vacuum cleaner or by wet-brushing and put the material into a convenient waste disposal container. Keep container closed.

7. HANDLING AND STORAGE

Precautions for safe handling:

Do not get on skin or in eyes. Do not inhale vapor or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge. Open and handle container with care. Metal containers involved in the transfer of this material should be grounded and bonded.

Conditions for safe storage, including any incompatibilities:

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters, e.g., occupational exposure limit values or biological limit values:

Occupational Exposure Limits

Component	Source	Type	Value	Note
tert-Butyl Alcohol	US (ACGIH)	TWA	100 ppm, 300 mg/m ³	ACGIH Threshold Limit Value
tert-Butyl Alcohol	US (OSHA)	STEL	150 ppm	OSHA Table Z-1 Limits for Air Contaminants

Appropriate engineering controls:

Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Individual protection measures, such as personal protective equipment:

Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose

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combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. **1.703.921.3887 (INT)**
respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection:

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Use equipment approved by appropriate government standards, such as NIOSH (US) or EN166 (EU) Maintain eye wash fountain and quick-drench facilities in work area.

Skin and body protection:

Wear impervious, flame retardant, antistatic protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.)	Liquid. Colorless, clear.
Freezing point	25 °C (78 °F)
Initial boiling point and boiling range	83 °C (181 °F)
Flash point	11 °C (52 °F) - closed cup
Upper / Lower flammability or explosive limits	2.4% (V) / 8.0% (V)
Vapor pressure	41 hPa (31 mmHg) at 20 °C (68 °F)
Vapor Density	2.6
Relative Density	0.775 g/mL at 25 °C (77 °F)
Solubility(ies)	soluble
Auto-ignition temperature	478 °C (892 °F)
Formula (tert-BUTYL ALCOHOL)	C4H10O
Molecular Weight (tert-BUTYL ALCOHOL)	74.12 g/mol

10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	Vapors may form explosive mixture with air.
Conditions to avoid (e.g., static discharge, shock or vibration)	Heat, flames, and sparks. Extreme temperatures and direct sunlight.
Incompatible materials	Strong oxidizing agents, Copper, Alkali metals, Aluminum



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Hazardous decomposition products	Hazardous decomposition products formed by heating or burning (NTP) - Carbon oxides
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11. TOXICOLOGICAL INFORMATION

- tert-Butyl Alcohol 75-65-0

Product Summary:

t-Butanol is a known animal carcinogen. It has no confirmed teratogenic, mutagenic, or reproductive effects in humans.

Acute Toxicity:

LD50 (Dermal)	Rabbit	>2,000 mg/kg
LD50 (Oral)	Rat	2,743 mg/kg

Irritation:

Eyes

Rabbit - Irritating to eyes - 24 hours

Skin

Skin - rabbit - Mild skin irritation - 24 hours

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Other Hazards

Organ	Description
Eyes	Irritating to the eyes.
Ingestion	Harmful if ingested.
Inhalation	May be harmful if inhaled. Irritating to the respiratory tract.
Skin	Harmful if absorbed through skin. Irritating to skin.



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Chronic	Prolonged or repeated breathing of high concentrations may cause symptoms of depression. May cause dermatitis by defatting the skin from prolonged or repeated contact. This material has been shown to induce tumors in laboratory animals. These findings are not likely relevant to humans. May be toxic to the developing embryo and fetus.
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12. ECOLOGICAL INFORMATION

- tert-Butyl Alcohol 75-65-0

Ecotoxicity (aquatic and terrestrial, where available):

Acute Fish Toxicity (tert-BUTYL ALCOHOL)

LC50 / 96 h Pimephales promelas (fathead minnow) - 6,140 mg/L

Toxicity to Aquatic Plants (tert-BUTYL ALCOHOL)

Growth inhibition / 96 HOURS Chlorella vulgaris (Fresh water algae)- 1,000 mg/L

Persistence and degradability:

Biodegradability: Zahn-Wellens Test Result: > 99.9 % - Readily biodegradable.

Bioaccumulative potential:

Does not bioaccumulate.

13. DISPOSAL CONSIDERATIONS

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

14. TRANSPORT INFORMATION

Description of waste residues and information on their safe handling and methods of disposal:

UN number	UN1120
UN proper shipping name	Butanols
Transport hazard class(es)	3
Packing group (if applicable)	II

IMDG



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UN-Number: UN1120 Class: 3 Packing Group: II

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EMS-No: F-E, S-D

Proper shipping name: BUTANOLS

Marine pollutant: No

IATA

UN-Number: UN1120 Class: 3 Packing Group: II

Proper shipping name: Butanols

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question:

OSHA Hazards

Flammable liquid, Irritant, Target organ effect

All ingredients are on the following inventories or are exempted from listing

Country	Notification
Australia	AICS
Canada	DSL
China	IECS
European Union	EINECS
Japan	ENCS/ISHL
Korea	ECL
New Zealand	NZIoC
Philippines	PICCS
United States of America	TSCA

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313: tert-Butyl Alcohol CAS-No. 78-92-2 Revision Date 1993-04-24

SARA 311/312 Hazards

Acute Health Hazard

Chronic Health Hazard

Fire Hazard

CERCLA

No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA

Massachusetts Right To Know Components



PHARMCO
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tert-Butyl alcohol CAS-No. 75-65-0 Revision Date 2007-07-01 **+1.703.527.3887 (INT)**

Pennsylvania Right To Know Components

tert-Butyl alcohol CAS-No. 75-65-0 Revision Date 2007-07-01

New Jersey Right To Know Components

tert-Butyl alcohol CAS-No. 75-65-0 Revision Date 2007-07-01

California Prop 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION: INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS

Disclaimer

Greenfield Global USA, Inc. believes that the information on this SDS was obtained from reliable sources. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, Greenfield Global USA, Inc. does not assume responsibility and expressly disclaims liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable. Information is correct to the best of our knowledge at the date of the SDS publication.