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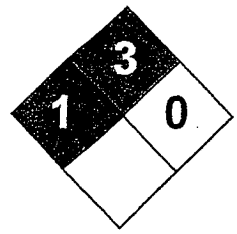

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
tert-Butyl alcohol MSDS

Section 1: Chemical Product and Company Identification

Product Name: tert-Butyl alcohol

Catalog Codes: SLB1309

CAS#: 75-65-0

RTECS: EO1925000

TSCA: TSCA 8(b) inventory: tert-Butyl alcohol

CI#: Not applicable.

Synonym: Trimetylcarbinol

Chemical Name: 2-methyl-2-propanol

Chemical Formula: (CH3)3COH

Contact Information:

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Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
{tert-}Butyl alcohol	75-65-0	100

Toxicological Data on Ingredients: tert-Butyl alcohol: ORAL (LD50): Acute: 2743 mg/kg [Rat]. DERMAL (LD50): Acute: 2000 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 4 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 477.78°C (892°F)

Flash Points: CLOSED CUP: 11.1°C (52°F). OPEN CUP: 16.2°C (61.2°F) (Cleveland).

Flammable Limits: LOWER: 2.4% UPPER: 8%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
May form explosive mixtures with air. CAUTION: MAY BURN WITH NEAR INVISIBLE FLAME. Potassium sodium alloy + tert-butyl alcohol caused ignition

Special Remarks on Explosion Hazards: tert-butyl alcohol and hydrogen + sulfuric acid caused explosion

Section 6: Accidental Release Measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. If the product is in its solid form: Use a shovel to put the material into a convenient waste disposal container. If the product is in its liquid form: Absorb with DRY earth, sand or other non-combustible material. Absorb with an inert material and put the spilled material in an appropriate waste disposal. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if

needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 300 (mg/m3) from ACGIH (TLV) [United States] TWA: 100 (ppm) from ACGIH (TLV) [United States] TWA: 100 STEL: 150 from NIOSH [United States] TWA: 300 STEL: 450 (mg/m3) from NIOSH [United States] TWA: 100 STEL: 150 (ppm) [United Kingdom (UK)] TWA: 308 STEL: 462 (mg/m3) [United Kingdom (UK)] TWA: 100 STEL: 150 (ppm) [Canada] TWA: 303 STEL: 455 (mg/m3) [Canada] TWA: 100 from OSHA (PEL) [United States] TWA: 300 from OSHA (PEL) [United States]3 Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance:
Liquid. (Colorless liquid (above 78 F) which forms white rhombic crystals.)

Odor: Camphor.

Taste: Not available.

Molecular Weight: 74.12g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 82.41°C (180.3°F)

Melting Point: 25.7°C (78.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.78581 (Water = 1)

Vapor Pressure: 4.1 kPa (@ 20°C)

Vapor Density: 2.55 (Air = 1)

Volatility: Not available.

Odor Threshold: 219 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 0.4

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility:
Soluble in cold water, hot water. Miscible in esters, aliphatic and aromatic hydrocarbons, alcohol, and ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Strong mineral acids can cuse composition to flammable isobutylene gas. Incompatible with mineral acids, sulfuric acid, and oxidizing materials.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2743 mg/kg [Rat]. Acute dermal toxicity (LD50): 2000 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 10000 4 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause cancer (tumorigenic) based on animal data. May cause adverse reproductive effects (fertility and fetotoxicity) and birth defects based on animal data.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. Eyes: Causes eye irritation. Inhalation: Causes respiratory tract and mucous membrane irritation. May also affect behavior/Central Nervous system (ataxia, somnolence), resppiration (dyspnea), urinary system. Ingestion: Can cause gastrointestinal irritation. Exposure can cause nausea, headache and vomiting. May also affect behavior/Central Nervous system (convulsions, seizures, withdrawl), heart, respiration (dyspnea), urinary system, metabolism, liver, sense organs.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Butanol UNNA: 1120 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Illinois toxic substances disclosure to employee act: tert-Butyl alcohol Rhode Island RTK hazardous substances: tert-Butyl alcohol Pennsylvania RTK: tert-Butyl alcohol Minnesota: tert-Butyl alcohol Massachusetts RTK: tert-Butyl alcohol Massachusetts spill list: tert-Butyl alcohol New Jersey: tert-Butyl alcohol New Jersey spill list: tert-Butyl alcohol New Jersey toxic catastrophe prevention act: tert-Butyl alcohol California Director's list of Hazardous Substances: tert-Butyl alcohol TSCA 8(b) inventory: tert-Butyl alcohol SARA 313 toxic chemical notification and release reporting: tert-Butyl alcohol

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).

DSCL (EEC):
R11- Highly flammable. R21- Harmful in contact with skin. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

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