

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 02/15/2010

Reviewed on 02/12/2010

1 Identification of substance:**Product details:****Product name:** tert-Butyl alcohol**Stock number:** 33278**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company
 Johnson Matthey Catalog Company, Inc.
 30 Bond Street
 Ward Hill, MA 01835-8099
 Emergency Phone: (978) 521-6300
 CHEMTREC: (800) 424-9300
 Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:**Chemical characterization:****Description: (CAS#)**

tert-Butyl alcohol (CAS# 75-65-0)

Identification number(s):**EINECS Number:** 200-889-7**Index number:** 603-005-00-1**3 Hazards identification****Hazard description:**

Xn Harmful
 F Highly flammable

Information pertaining to particular dangers for man and environment

R 11 Highly flammable.

R 20 Harmful by inhalation.

R 36/37 Irritating to eyes and respiratory system.

Classification system**HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	1
FIRE	3
REACTIVITY	1

Health (acute effects) = 1
 Flammability = 3
 Reactivity = 1

GHS label elements**Danger**

2.6/2 - Highly flammable liquid and vapour.

**Warning**

3.1/4 - Harmful if inhaled.

3.3/2A - Causes serious eye irritation.

3.8/3 - May cause respiratory irritation.

Prevention:

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Response:**IF SWALLOWED:** Immediately call a POISON CENTER or doctor/physician.

Get immediate medical advice/attention.

Storage:

Store in a well-ventilated place.

4 First aid measures**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

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Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Seek immediate medical advice.**5 Fire fighting measures****Suitable extinguishing agents**

Use carbon dioxide, extinguishing powder or foam. Water may be ineffective but may be used for cooling exposed containers.

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Carbon monoxide (CO)

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures**Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Keep away from ignition sources.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Information for safe handling:**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires:

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

Storage**Requirements to be met by storerooms and receptacles:** Store in a cool location.**Information about storage in one common storage facility:**

Store away from oxidizing agents.

Do not store together with acids.

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

8 Exposure controls and personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

t-Butyl alcohol

	ppm
ACGIH TLV	100; Not classified as a human carcinogen
Austria MAK	50
Belgium TWA	100; 150-STEL

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France VME	100
Germany MAK	100
Japan OEL	50
Korea TLV	100
Netherlands MAC-TGG	100
Norway TWA	25
Poland TWA	300 mg/m ³ ; 450 mg/m ³ -STEL
Sweden NGV	50; 75-KTV (skin)
Switzerland MAK-W	100; 200-KZG-W
United Kingdom TWA	100; 150-STEL
USA PEL	100

Additional information: No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Breathing equipment: Use suitable respirator when high concentrations are present.**Protection of hands:** Impervious gloves**Eye protection:** Safety glasses**Body protection:** Protective work clothing.**9 Physical and chemical properties:****General Information**

Form:	Liquid
Color:	Colorless
Odor:	Camphor-like

Change in condition

Melting point/Melting range:	25°C (77°F)
Boiling point/Boiling range:	83°C (181°F)
Sublimation temperature / start:	Not determined

Flash point: 11°C (52°F)**Ignition temperature:** 490°C (914°F)**Decomposition temperature:** Not determined**Explosion limits:**

Lower:	2.3 Vol %
Upper:	8 Vol %

Vapor pressure at 20°C (68°F): 40.7 hPa (31 mm Hg)**Density at 20°C (68°F):** 0.786 g/cm³**Solubility in / Miscibility with Water:** Fully miscible**Viscosity:**
dynamic at 30°C (86°F): 3.3 mPas**10 Stability and reactivity****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:

Oxidizing agents

Acids

Alkali metals

Dangerous reactions No dangerous reactions known**Dangerous products of decomposition:** Carbon monoxide and carbon dioxide**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	2743 mg/kg (rat)
		3559 mg/kg (rabbit)

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Dermal	LD50	>2 gm/kg (rabbit)
Inhalative	LC50/4H	>10000 ppm/4H (rat)
Irritation of skin	mild	500 µL/24H (rabbit)

Primary irritant effect:**on the skin:** Causes mild irritant effect.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Other information (about experimental toxicology):**

Reproductive effects have been observed on tests with laboratory animals.

Tumorigenic effects have been observed on tests with laboratory animals.

Subacute to chronic toxicity:

t-Butyl alcohol may cause abdominal pain, vomiting, headache, muscle weakness, giddiness, ataxia, confusion, delirium, diarrhea, coma and death from respiratory failure. May damage lungs, liver, kidneys and heart.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.

12 Ecological information:**General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations**Product:****Recommendation** Consult state, local or national regulations to ensure proper disposal.**Uncleaned packagings:****Recommendation:** Disposal must be made according to official regulations.**Recommended cleansing agent:** Water, if necessary with cleansing agents.**14 Transport information****DOT regulations:**

Hazard class: 3
Identification number: UN1120
Packing group: II
Proper shipping name (technical name): BUTANOLS
Label: 3

Land transport ADR/RID (cross-border)

ADR/RID class: 3 (F1) Flammable liquids
Danger code (Kemler): 33
UN-Number: 1120
Packaging group: II
Description of goods: 1120 BUTANOLS

Maritime transport IMDG:

IMDG Class: 3

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Product name: tert-Butyl alcohol

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UN Number:	1120
Label	3
Packaging group:	II
Marine pollutant:	No
Proper shipping name:	BUTANOLS

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class:	3
UN/ID Number:	1120
Label	3
Packaging group:	II
Proper shipping name:	BUTANOLS

UN "Model Regulation": UN1120, BUTANOLS, 3, II**15 Regulations****Product related hazard informations:****Hazard symbols:**

Xn Harmful
 F Highly flammable

Risk phrases:

11 Highly flammable.
 20 Harmful by inhalation.
 36/37 Irritating to eyes and respiratory system.

Safety phrases:

9 Keep container in a well-ventilated place.
 16 Keep away from sources of ignition - No smoking.
 46 If swallowed, seek medical advice immediately and show this container or label.

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
 All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use:

For use only by technically qualified individuals.
 This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
 ICAO: International Civil Aviation Organization
 ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals
 EINECS: European Inventory of Existing Commercial Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 HMIS: Hazardous Materials Identification System (USA)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent