

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 11/11/2008

Reviewed on 11/11/2008

1 Identification of substance:

Product details:

Product name: 1-Butanol

Stock number: L13171

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#)

1-Butanol (CAS# 71-36-3), 100%

Identification number(s):

EINECS Number: 200-751-6

Index number: 603-004-00-6

3 Hazards identification

Hazard description:



Xn Harmful

Information pertaining to particular dangers for man and environment

R 10 Flammable.

R 22 Harmful if swallowed.

R 37/38 Irritating to respiratory system and skin.

R 41 Risk of serious damage to eyes.

R 67 Vapours may cause drowsiness and dizziness

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

4 First aid measures

After inhalation

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

Seek immediate medical advice.

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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 medical treatment.

Information for doctor**The following symptoms may occur:**

Breathing difficulty
Gastric or intestinal disorders.
Nausea
Dizziness

5 Fire fighting measures

Suitable extinguishing agents

Carbon dioxide
Fire-extinguishing powder
Dry sand

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

In case of fire, the following can be released:
Carbon monoxide and carbon dioxide

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.

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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:**

No special requirements.

Information about storage in one common storage facility:

Do not store together with oxidizing and acidic materials.

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:

1-Butanol

	ppm
ACGIH TLV	50-Ceiling (skin)
Austria MAK	50
Belgium	50-STEL (skin)
Denmark TWA	50 (skin)
Finland TWA	50; 75-STEL (skin)
France VLE	50
Germany MAK	100
Hungary TWA	100 mg/m ³ ; 200 mg/m ³ -STEL (skin)
Japan OEL	50 (skin)
Korea TLV	50-Ceiling (skin)
Netherlands MAC-TGG	50 (skin)
Norway TWA	25
Poland TWA	50 mg/m ³ ; 140 mg/m ³ -STEL
Russia	50-STEL
Sweden NGV	15; 30-TGV (skin)
Switzerland MAK-W	50; 100-KZG-W (skin)
United Kingdom	50-STEL (skin)
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

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Body protection: Protective work clothing.

9 Physical and chemical properties:

General Information	
Form:	Liquid
Color:	Colorless
Odor:	Alcohol-like
Change in condition	
Melting point/Melting range:	-90°C (-130°F)
Boiling point/Boiling range:	117.7°C (244°F)
Sublimation temperature / start:	Not determined
Flash point:	35°C (95°F)
Ignition temperature:	342°C (648°F)
Decomposition temperature:	Not determined
Explosion limits:	
Lower:	1.4 Vol %
Upper:	11.2 Vol %
Vapor pressure at 20°C (68°F):	5.3 hPa (4 mm Hg)
Density at 20°C (68°F):	0.81 g/cm ³
Solubility in / Miscibility with Water:	Partly miscible

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
 Reducing agents
 Acid chlorides
 Acid anhydrides
 Aluminum/aluminum alloys.

Dangerous reactions Reacts with oxidizing agents

Dangerous products of decomposition: Carbon monoxide and carbon dioxide

11 Toxicological information

Acute toxicity:

LD/LC50 values that are relevant for classification:

Route	LD50	Species
Oral		2500 mg/kg (bird-wild bird species)
		2680 mg/kg (mouse)
		790 mg/kg (rat)
		3484 mg/kg (rabbit)

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Dermal	LD50	3400 mg/kg (rabbit)
Inhalative	LC50/4H	8000 ppm/4H (rat)
Irritation of skin	moderate	20 mg/24H (rabbit)
Irritation of eyes	severe	2 mg (rabbit)

Primary irritant effect:**on the skin:** Irritant to skin and mucous membranes.**on the eye:**

Strong irritant with the danger of severe eye injury.

Irritating effect.

Sensitization: No sensitizing effects known.**Subacute to chronic toxicity:**

Effects of ingestion of 1-Butanol include headache, nausea, vomiting, dizziness, gastrointestinal irritation, central nervous system depression, hearing loss and unconsciousness. Inhalation may cause irritation and drying of mucous membranes, headache, nausea, vomiting, dizziness, narcosis, respiratory failure, low blood pressure, central nervous system depression and unconsciousness. May damage the liver and kidneys.

Additional toxicological information:

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

EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.

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.

14 Transport information**DOT regulations:****Hazard class:**

3

Identification number:

UN1120

Packing group:

III

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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
UN Number: 1120
Label: 3
Packaging group: III
Proper shipping name: BUTANOLS

Air transport ICAO-TI and IATA-DGR:

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

15 Regulations**Product related hazard informations:**

Hazard symbols:
 Xn Harmful

Risk phrases:
 10 Flammable.
 22 Harmful if swallowed.
 37/38 Irritating to respiratory system and skin.
 41 Risk of serious damage to eyes.
 67 Vapours may cause drowsiness and dizziness

Safety phrases:
 7/9 Keep container tightly closed and in a well-ventilated place.
 13 Keep away from food, drink and animal feedingstuffs.

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- 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- 37/39 Wear suitable gloves and eye/face protection.
- 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.

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: Paul V. Connolly

USA