

MATERIAL SAFETY DATA SHEET

1-Butanol

Section 1 - Chemical Product and Company Identification

MSDS Name:	1-Butanol
Synonyms:	n-Butyl alcohol; n-Butanol
Company Identification: (INDIA)	Veritas House, 70 Mint Road, Fort, Mumbai - 400 001. INDIA
For information in the INDIA, call:	Tel: +91 - 22 - 2275 5555 / 6184 0000, Fax: +91 - 22 - 2275 5556 / 6184 0001

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	%	EINECS#
71-36-3	1-Butanol	>99%	200-751-6

Hazard Symbols:	XN
	
Risk Phrases:	10 22 37/38 41 67

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Flammable. Harmful if swallowed. Irritating to respiratory system and skin. Risk of serious damage to eyes. Vapours may cause drowsiness and dizziness.

Potential Health Effects

Eye:	May result in corneal injury. May cause eye irritation and possible damage. Risk of serious damage to eyes.
Skin:	Causes skin irritation. May be absorbed through the skin in harmful amounts. Prolonged and/or repeated contact may cause defatting of the skin and dermatitis.
Ingestion:	Harmful if swallowed. Aspiration hazard. May cause irritation of the digestive tract. May cause liver damage. Aspiration of material into the lungs may cause chemical pneumonitis, which may be fatal.
Inhalation:	May cause respiratory tract irritation. May be harmful if inhaled. Inhalation of vapors may cause drowsiness and dizziness.
Chronic:	

Section 4 - First Aid Measures

Eyes:	Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin:	Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion:	Get medical aid. Wash mouth out with water.
Inhalation:	Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:	Treat symptomatically and supportively.
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Section 5 - Fire Fighting Measures

General Information:	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor.
Extinguishing Media:	Use water spray, dry chemical, carbon dioxide, or chemical foam.

Section 6 - Accidental Release Measures

General Information:	Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks:	Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool. Do not let this chemical enter the environment.

Section 7 - Handling and Storage

Handling:	Use spark-proof tools and explosion proof equipment. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Avoid ingestion and inhalation. Use only in a chemical fume hood.
Storage:	Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

Exposure Limits

CAS# 71-36-3:
 United Kingdom, WEL - STEL: 50 ppm STEL; 154 mg/m³ STEL
 United States OSHA: 100 ppm TWA; 300 mg/m³ TWA
 Belgium - TWA: 50 ppm VLE; 154 mg/m³ VLE
 France - VLE: 50 ppm VLE; 150 mg/m³ VLE
 Germany: 100 ppm TWA; 310 mg/m³ TWA
 Japan: 50 ppm Ceiling; 150 mg/m³ Ceiling
 Malaysia: 50 ppm Ceiling; 152 mg/m³ Ceiling
 Netherlands: 15 ppm STEL; 45 mg/m³ STEL
 Russia: 1 mg/m³ TWA (aerosol); 10 mg/m³ TWA (vapour) Russia: 3 mg/m³ STEL (aerosol)
 Spain: 50 ppm VLA-EC; 154 mg/m³ VLA-EC

Personal Protective Equipment

Eyes:	Wear chemical splash goggles.
Skin:	Wear appropriate protective gloves to prevent skin exposure.
Clothing:	Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State:	Clear liquid
Color:	colorless
Odor:	banana-like - sweetish odor
pH:	Not available
Vapor Pressure:	6.7mbar @20 deg C
Viscosity:	2.95 mPa.s @20 deg C
Boiling Point:	117.6 deg C @760mmHg (243.68°F)
Freezing/Melting Point:	-89 deg C (-128.20°F)
Autoignition Temperature:	340 deg C (644.00 deg F)
Flash Point:	35 deg C (95.00 deg F)
Explosion Limits: Lower:	1.4 Vol %
Explosion Limits: Upper:	11.2 Vol %
Decomposition Temperature:	Not available
Solubility in water:	80 g/l (20°C)
Specific Gravity/Density:	0.810 g/cc
Molecular Formula:	C4H10O
Molecular Weight:	74.12

Section 10 - Stability and Reactivity

Chemical Stability:	Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid:	High temperatures, incompatible materials, ignition sources.
Incompatibilities with Other Materials	Strong oxidizing agents, reducing agents, acid chlorides, aluminum, copper, copper alloys, organic peroxides, acid anhydrides, chromium trioxide.
Hazardous Decomposition Products	Carbon monoxide, carbon dioxide.
Hazardous Polymerization	Will not occur.

Section 11 - Toxicological Information

RTECS#:	CAS# 71-36-3: EO1400000
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LD50/LC50:	RTECS: CAS# 71-36-3: Draize test, rabbit, eye: 2 mg Severe; Draize test, rabbit, eye: 2 mg/24H Severe; Draize test, rabbit, skin: 405 mg/24H Moderate; Draize test, rabbit, skin: 20 mg/24H Moderate; Inhalation, rat: LC50 = 8000 ppm/4H; Inhalation, rat: LC50 = 24000 mg/m ³ /4H; Oral, mouse: LD50 = 100 mg/kg; Oral, rabbit: LD50 = 3484 mg/kg; Oral, rabbit: LD50 = 3400 mg/kg; Oral, rat: LD50 = 790 mg/kg; Oral, rat: LD50 = 800 mg/kg; Skin, rabbit: LD50 = 3400 mg/kg;
Carcinogenicity:	1-Butanol - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.
Other:	See actual entry in RTECS for complete information.

Section 12 - Ecological Information

Ecotoxicity:	Fish: Fathead Minnow: LC50: 1940 mg/l; 1h; Daphnia: Daphnia: LC50: 1983 mg/l; 48h;
Other:	In water, substance volatilizes and biodegrades. Biodegradable. Do not empty into drains. Log Pow: 0.9

Section 13 - Disposal Considerations

Dispose of in a manner consistent with federal, state, and local regulations.

Section 14 - Transport Information

	IATA	IMO	RID/ADR
Shipping Name:	BUTANOLS	BUTANOLS	BUTANOLS
Hazard Class:	3	3	3
UN Number:	1120	1120	1120
Packing Group:	III	III	III

USA RQ: CAS# 71-36-3: 5000 lb final RQ; 2270 kg final RQ

Section 15 - Regulatory Information

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:

- 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.

Safety Phrases:

- S 7/9 Keep container tightly closed and in a well-ventilated place.
- S 13 Keep away from food, drink and animal feeding stuffs.

➤ S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
➤ S 37/39 Wear suitable gloves and eye/face protection.
➤ S 46 If swallowed, seek medical advice immediately and show this container or label.
WGK (Water Danger/Protection)
➤ CAS# 71-36-3: 1
Canada
➤ CAS# 71-36-3 is listed on Canada's DSL List
US Federal
➤ TSCA
➤ CAS# 71-36-3 is listed on the TSCA Inventory.

Section 16 - Other Information

MSDS Creation Date:	July 24, 2015
Revision #0 Date	

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