



n-Butanol

SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Trade name	n-Butanol		
Synonyms	Butyl Alcohol, 1-Butanol		
Use	Fuel additive, Industrial use, Intermediate, Oilfield, Paint and Coatings, Process/Extraction Solvent, Raw material for chemical processes, Raw material for industry, Solvent		
Company	Sasol Chemicals (USA) LLC (an affiliate of Sasol Chemicals North America LLC)		
Address	12120 Wickchester Lane Houston TX 77079		
Telephone	CHEMTREC North America Transportation Emergency (24-hr)		(800) 424-9300
	CHEMTREC World Wide		(703) 527-3887
	Other Emergencies (24-hr)		(337) 494-5142
	MSDS and Product Information (8:00am-4:30pm CST)		(281) 588-3491
	Health and Safety Information (7:30am-4:00pm CST)		(281) 588-3492
E-mail address	SasolElectronicSDS@us.sasol.com		

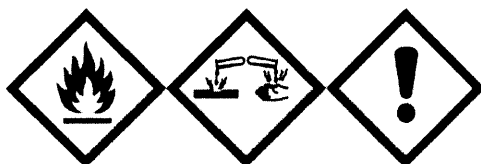
SECTION 2 HAZARDS IDENTIFICATION

GHS Hazards

Flammable liquids	Category 3
Acute toxicity (Oral)	Category 4
Serious eye damage	Category 1
Skin irritation	Category 2
Specific target organ toxicity - single exposure	Category 3 (Narcotic effects)
Specific target organ toxicity - single exposure	Category 3 (Resp. irritation)

LABEL ELEMENTS

Hazard symbols



Signal word Danger

Hazard statements	H226 Flammable liquid and vapour.
	H302 Harmful if swallowed.
	H315 Causes skin irritation.
	H318 Causes serious eye damage.
	H335 May cause respiratory irritation.
	H336 May cause drowsiness or dizziness.



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Precautionary statements

- Prevention**
- P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 - P240 Ground/bond container and receiving equipment.
 - P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
 - P242 Use only non-sparking tools.
 - P243 Take precautionary measures against static discharge.
 - P280 Wear protective gloves/ eye protection/ face protection.
 - P264 Wash skin thoroughly after handling.
 - P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
- Response**
- P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
 - P332 + P313 If skin irritation occurs: Get medical advice/ attention.
 - P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide for extinction.
 - P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
 - P330 Rinse mouth.
 - P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Storage** P403 + P405 + P235 Store locked up in a well-ventilated place. Keep cool.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

<u>Components</u>	<u>CAS-No.</u>	<u>Weight percent</u>
1-Butanol	71-36-3	>=99

See Section 8 for Exposure Guidelines and Section 15 for Regulatory Classifications.

SECTION 4 FIRST AID MEASURES

- Eye contact** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
- Skin contact** Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. When symptoms persist or in all cases of doubt seek medical advice. Wash contaminated clothing before re-use.
- Inhalation** Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. In case of shortness of breath, give oxygen. Call a physician immediately.

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Ingestion If swallowed, call a poison control centre or doctor immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

SECTION 5 FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES

Fire/explosion Flash back possible over considerable distance. NFPA Class II combustible liquid.

Suitable extinguishing media Water spray, Alcohol-resistant foam, Dry chemical, Carbon dioxide (CO₂)

Protective equipment and precautions for firefighters Wear self-contained breathing apparatus and protective suit. Keep containers and surroundings cool with water spray.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Methods and materials for containment and cleaning up Evacuate personnel to safe areas. Remove all sources of ignition. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Do not flush into surface water or sanitary sewer system.

Spill precautions Material can create slippery conditions.

SECTION 7 HANDLING AND STORAGE

Safe handling advice Ensure all equipment is electrically grounded before beginning transfer operations.

Storage/Transport pressure Ambient

Load/Unload temperature Ambient

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING MEASURES

Ensure adequate ventilation, especially in confined areas.

PERSONAL PROTECTIVE EQUIPMENT

Eyes Wear as appropriate: Goggles, Face-shield

Skin Wear suitable protective clothing, gloves and eye/face protection.

Inhalation Respiratory protection is normally not required except in emergencies or when conditions cause excessive airborne levels of mists or vapors. Use NIOSH approved respiratory protection.

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EXPOSURE GUIDELINES

<u>Components</u>	<u>Exposure limit(s)</u>
1-Butanol	OSHA PEL 100 ppm 300 mg/m ³ ACGIH TLV (8-hour) 20 ppm *Skin Hazard: Skin exposure should be prevented or reduced to control skin absorption.

PEL= Permissible Exposure Limits
TLV= Threshold Limit Value
EL= Excursion Limit

TWA= Time Weighted Average (8 hr.)
STEL= Short Term Exposure Limit (15 min.)
WEEL= Workplace Environmental Exposure Level

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	liquid;
Colour	colourless
Form	liquid
Odour	sweet pungent
Odour Threshold	no data available
Flash point	38 °C, 100 °F; ASTM D 93;
Flammability	Upper explosion limit: 11.2 %(V) Lower explosion limit: 1.4 %(V)
Boiling point/boiling range	117 °C, 242 °F;
Melting point/range	-89 °C, -128 °F;
Auto-ignition temperature	343 °C, 649 °F;
Decomposition temperature	no data available
Flammability (solid, gas)	no data available
Vapour pressure	4.5 mm Hg @ 25 °C, 78 °F;
Vapour density	2 - 3
Density	0.805 g/cm ³ @ 27 °C, 80 °F;
Specific gravity	no data available
Water solubility	7.8 g/100g partly soluble

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Viscosity	4 cSt @ 20 °C, 68 °F;
pH	no data available
Evaporation rate	no data available
Partition coefficient: n-octanol/water	no data available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	Stable at normal ambient temperature and pressure.
Chemical stability	No decomposition if stored and applied as directed.
Conditions to avoid	Keep away from heat and sources of ignition.
Hazardous decomposition products	Combustion products include carbon dioxide, carbon monoxide and possibly other unidentified organic compounds.
Materials to avoid	Can react with strong oxidizers, inorganic acids, and halogens.
Hazardous polymerisation	None.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute dermal toxicity	LD50 rabbit: 2,000 - 5,300 mg/kg
Acute inhalation toxicity	LC50 rat (4 hours): 7.4 mg/l
Acute oral toxicity	LD50 rat: 300 - 2,000 mg/kg
Skin corrosion/irritation	Primary irritation (rabbit): 24 hours; 1.4 (Max. score is 8.0.)
Eye damage/irritation	Primary irritation (rabbit): 27.3 (Max. score is 110.)
Respiratory or skin sensitization	no data available
Germ cell mutagenicity	Genotoxicity In vitro: no data available Genotoxicity In vivo: no data available Assessment Mutagenicity: no data available

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Reproductive toxicity	Reproductive toxicity: no data available
	Assessment Reproductive toxicity: no data available
	Teratogenicity: no data available
	Assessment teratogenicity: no data available
STOT - single exposure	no data available
STOT - repeated exposure	no data available
Aspiration toxicity	no data available
Carcinogenicity	Assessment carcinogenicity: Contains no ingredient listed as a carcinogen

SECTION 12 ECOLOGICAL INFORMATION

Aquatic toxicity	Non-toxic to aquatic life.
Toxicity to fish	LC50 (Pimephales promelas (fathead minnow)) 96 hours: 1,376 mg/l
Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 48 hours: 1,328 mg/l
Toxicity to algae	ErC50 (Pseudokirchneriella subcapitata (green algae)) 96 hours: 225 mg/l
Chronic toxicity to fish	no data available
Chronic toxicity to aquatic invertebrates	no data available
Biodegradation	Readily biodegradable. Closed Bottle test (20 d): 92 %
Bioaccumulation	no data available
Mobility in soil	no data available
Other adverse effects	no data available



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SECTION 13 DISPOSAL CONSIDERATIONS

- Waste Code** D001 - Ignitability (RQ 100 LB). Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures, contamination, and spillage may change the classification.
- Disposal methods** Land disposal of this product is restricted. Dispose of only in accordance with local, state, and federal regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.
- Empty containers.** Empty containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, triple-rinsed, properly bunged and promptly returned to a drum reconditioner, or properly disposed.

SECTION 14 TRANSPORT INFORMATION

- DOT** UN 1120, Butanols, 3, III
When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.
- IATA** UN 1120, Butanols, 3, III
When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.
- IMDG** UN 1120, Butanols, 3, III
When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Remarks no data available

SECTION 15 REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

OSHA Hazards (HCS 1994)

Flammable liquid, Eye irritation, Skin irritation

TSCA Inventory Listing

Components

1-Butanol

CAS-No.

71-36-3

SARA 302 Status

Components

CAS-No.

Weight percent

n-Butanol

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

SARA 311/312 Classification

"Immediate (acute) health hazard", "Fire hazard"

SARA 313 Chemical Components

1-Butanol

CAS-No.

71-36-3

Weight percent

>= 99 %

US. EPA CERCLA Hazardous Substances (40 CFR 302)

Components

1-Butanol

Reportable Quantity

5,000 LB

Weight percent

>= 99 %

INTERNATIONAL REGULATIONS

WHMIS Classification

Class B, Division 2: Flammable liquid.

Class D, Division 2, Subdivision B: Toxic material.

European Union

Classification according to Regulation (EU) 1272/2008.

Flammable liquids, Category 3

Acute toxicity (Oral), Category 4

Serious eye damage, Category 1

Skin irritation, Category 2

Specific target organ toxicity - single exposure, Category 3 (Narcotic effects)

Specific target organ toxicity - single exposure, Category 3 (Resp. irritation)

Australia. Inventory of Chemical Substances (AICS)	Listed
Japan. Inventory of Existing and New Chemical Substances (ENCS)	Listed
Japan. Industrial Safety & Health Law (ISHL) Inventory	Listed
Canada. Domestic Substances List (DSL) Inventory	Listed
Canadian Non-Domestic Substance Listing (NDSL)	Not listed
European Inventory of Existing Commercial Chemical Substances (EINECS) Listing	Listed
Philippines. Inventory of Chemicals / Chemical Substances (PICCS)	Listed
Korea. Existing Chemicals Inventory (KECI)	Listed
China. Inventory of Existing Chemical Substances (IECSC)	Listed
Mexico. National Inventory of Chemical Substances (INSQ)	Listed
New Zealand. Inventory of Chemicals (NZIoC)	Listed



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Switzerland. Inventory of Notified New Substances (CHINV) Listed

Taiwan. National Existing Chemical Inventory (NECI) Listed

Please note: The names and CAS numbers which are used for this product in the stated inventories may deviate from the information which is listed in Section 3.

STATE REGULATIONS

California Prop. 65
Components
 none

CAS-No.

SECTION 16 OTHER INFORMATION

HAZARD RATINGS

	<u>Health</u>	<u>Flammability</u>	<u>Physical Hazard/ Instability</u>
HMIS®	3	2	0
NFPA	3	2	0

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