N. Butyl Alcohol

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 11/01/2018 Revision date: 11/01/2018 Supersedes: 11/09/2015 Version: 1.2

SECTION 1: Identification

1.1. Identification

Product form	:	Substance
Substance name	:	N. Butyl Alcohol
CAS-No.	:	71-36-3
Formula	:	C4H10O
Synonyms	:	1-butanol / 1-butyl alcohol / 1-hydroxy butane / alcohol C4 / butan-1-ol / butanol / butyl alcohol / n-butanol

1.2. Recommended use and restrictions on use

Use of the substance/mixture	:	Solvent
Restrictions on use	:	None known

1.3. Supplier

ECOLINK

2177 Flintstone Dr.

Suite A

Tucker, GA 30084

770-621-8240(t)

www.ecolink.com

1.4. Emergency telephone number

Emergency number : **INFOTRAC** 800-535-5053

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Flammable liquids Category 3	H226	Flammable liquid and vapor
Acute toxicity (oral) Category 4	H302	Harmful if swallowed
Skin corrosion/irritation Category 2	H315	Causes skin irritation
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage
Specific target organ toxicity (single exposure) Category 3	H335	May cause respiratory irritation
Specific target organ toxicity (single exposure) Category 3	H336	May cause drowsiness or dizziness

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) :

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) :
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

Precautionary statements (GHS-US) : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 - Keep container tightly closed.
P240 - Ground/Bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P242 - Use only non-sparking tools.
P243 - Take precautionary measures against static discharge.
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 - Wash Skin thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves, eye protection, face protection.
P301+P312 - If swallowed: Call a POISON CENTER or doctor/physician if you feel unwell
P302+P352 - If on skin: Wash with plenty of water
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a poison center or doctor
P312 - Call a poison center or doctor if you feel unwell
P321 - Specific treatment (see supplemental first aid instruction on this safety data sheet)
P330 - Rinse mouth.
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P370+P378 - In case of fire: Use alcohol resistant foam, water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P403+P235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, and/or international regulations.

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : No additional information available.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	GHS-US classification
N. Butanol (Main constituent)	(CAS-No.) 71-36-3	99.8	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 STOT SE 3, H336

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Call a poison center/doctor/physician if you feel unwell.

First-aid measures after inhalation : Remove to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen provided a qualified individual is present. Get medical assistance if symptoms persist.

First-aid measures after skin contact : Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse or discard if they cannot be thoroughly cleaned. Get medical assistance if irritation persists.

First-aid measures after eye contact : Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Get immediate medical attention.

First-aid measures after ingestion : Do NOT induce vomiting unless directed to do so by medical personnel. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. If victim is conscious and alert, rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical attention.

4.2. Immediate medical attention and special treatment, if necessary

Treat symptomatically and supportively.

Vapors have narcotics effect and may cause headache, fatigue, dizziness and nausea.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use dry chemical or carbon dioxide for small fires, and alcohol resistant foam or water fog for large fires.

Unsuitable extinguishing media : Water may be ineffective in fighting the fire, as material is lighter and could float on water and spread fire.

5.2. Specific hazards arising from the chemical

Fire hazard : Flammable liquid and vapor. Gas/vapor flammable with air within explosion limits. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Vapors may form explosive mixture with air. Prevent buildup of vapor or gases to explosive concentrations.

Reactivity : Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Violent exothermic reaction with (some) acids. Violent to explosive reaction with (some) halogens.

5.3. Special protective equipment and precautions for fire-fighters

Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: seal off low-lying areas. Exposure to fire/heat: have neighborhood close doors and windows.

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety.

Protection during firefighting : Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Emergency procedures : Avoid contact with skin, eyes and clothing. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Keep unnecessary personnel away. Remove all sources of ignition. Wear personal protection equipment.

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent spreading in sewers. Do not let product enter drains, sewers or streams.

6.3. Methods and material for containment and cleaning up

For containment : Absorb with inert materials and place into appropriate containers for disposal. For large spills, flush area with water spray to disperse vapors and dilute spill to a nonflammable mixture.

Methods for cleaning up : Take up liquid spill into a non combustible material e.g.: sand, earth, vermiculite, kieselguhr, powdered limestone. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Use spark-/explosionproof appliances and lighting system. Use earthed equipment. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Keep container tightly closed.

Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Ground/bond container and receiving equipment.
Storage conditions	:	Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.
Storage temperature	:	< 30 °C
Heat-ignition	:	KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
Information on mixed storage	:	KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. halogens.
Storage area	:	Store in a dry area. Keep out of direct sunlight. Ventilation at floor level. Fireproof storeroom. Provide for a tub to collect spills. Provide the tank with earthing. Store only in a limited quantity.
Special rules on packaging	:	SPECIAL REQUIREMENTS: closing. clean. correctly labelled. meet the legal requirements. Secure fragile packaging in solid containers.
Packaging materials	:	SUITABLE MATERIAL: steel. stainless steel. monel steel. iron. copper. bronze. polypropylene. glass. MATERIAL TO AVOID: aluminum. PVC.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

N. Butyl Alcohol (71-36-3)		
ACGIH	Local name	n-Butanol
ACGIH	ACGIH TWA (ppm)	20 ppm
ACGIH	Remark (ACGIH)	Eye & URT irr
OSHA	OSHA PEL (TWA) (mg/m³)	300 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	100 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls	:	Ensure good ventilation of the work station to keep airborne concentrations low. An emergency eye wash / shower must be readily accessible to the work area.
Environmental exposure controls	:	Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Materials for protective clothing:

GIVE EXCELLENT RESISTANCE: butyl rubber. polyethylene/ethylenevinylalcohol. viton.

GIVE GOOD RESISTANCE: nitrile rubber.

GIVE LESS RESISTANCE: nitrile rubber. PVA. PVC.

GIVE POOR RESISTANCE: natural rubber. polyethylene

Hand protection:

Gloves – Wear appropriate protective gloves and clothing to prevent skin exposure.

Eye protection:

Face shield – Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.

Skin and body protection:

Protective clothing

Respiratory protection:

Full face mask with filter type A at conc. in air > exposure limit

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Liquid.
Color	:	Colorless
Odor	:	Alcohol odor
Odor threshold	:	0.83 ppm

pH	:	No data available
Melting point / Freezing point	:	< -89 °C
Freezing point	:	No data available
Boiling point	:	118 °C
Flash point	:	36 °C
Relative evaporation rate (butyl acetate=1)	:	0.5
Flammability / Explosive limits	:	1.5 – 11.3% (V)
Vapor pressure	:	4.4 mmHg
Relative vapor density at 20 °C	:	2.56
Relative density (water)	:	0.81
Specific gravity / density	:	810 kg/m³
Molecular mass	:	74.12 g/mol
Solubility	:	Moderately soluble in water.
Log Pow	:	0.88
Auto-ignition temperature	:	343 °C
Decomposition temperature	:	No data available
Viscosity, kinematic	:	3.642 mm²/s
Viscosity, dynamic	:	2.95 mPa.s
Explosion limits	:	43 - 350 g/m³
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2. Other information

VOC content : 100 %

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable at normal ambient temperature and pressure.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Oxidizing materials can cause a vigorous reaction. Polymerization will not occur.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

Carbon oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Oral: Harmful if swallowed.

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

N. Butyl Alcohol (71-36-3)	
LD50 oral rat	2292 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Female, Experimental value, Oral)
LD50 dermal rabbit	3430 mg/kg body weight (Equivalent or similar to OECD 402, 24 h, Rabbit, Male, Experimental value, Dermal)
ATE US (oral)	500 mg/kg body weight
ATE US (dermal)	3430 mg/kg body weight

Skin corrosion/irritation : Causes skin irritation.

Serious eye damage/irritation : Causes serious eye damage.

Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
Specific target organ toxicity – single exposure	:	May cause respiratory irritation. May cause drowsiness or dizziness.
Specific target organ toxicity – repeated exposure	:	Not classified
Aspiration hazard	:	Not classified
Viscosity, kinematic	:	3.642 mm²/s
Symptoms/effects	:	May cause drowsiness or dizziness.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	:	The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.
Ecology - water	:	Not harmful to crustacea. Not harmful to fishes. Groundwater pollutant. Nitrification of activated sludge isn't inhibited. Slightly harmful to algae. Not harmful to bacteria.

N. Butyl Alcohol (71-36-3)	
LC50 fish 1	1376 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Pimephales promelas, Static system, Fresh water, Experimental value, GLP)
EC50 Daphnia 1	1328 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)

12.2. Persistence and degradability

N. Butyl Alcohol (71-36-3)	
Persistence and degradability	Readily biodegradable in water.
Biochemical oxygen demand (BOD)	1.1 - 1.92 g O_2/g substance
Chemical oxygen demand (COD)	2.46 g O_2/g substance
ThOD	2.59 g O_2/g substance
BOD (% of ThOD)	0.33 - 0.79

12.3. Bioaccumulative potential

N. Butyl Alcohol (71-36-3)	
BCF other aquatic organisms 1	3.16 (BCFWIN, Calculated value)
Log Pow	1 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

12.4. Mobility in soil

N. Butyl Alcohol (71-36-3)	
Surface tension	0.07 N/m (20 °C, 1 g/l, OECD 115: Surface Tension of Aqueous Solutions)
Log Koc	0.388 (log Koc, PCKOCWIN v1.66, Calculated value)
Ecology - soil	Highly mobile in soil. May be harmful to plant growth, blooming and fruit formation.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods	:	Dispose of contents/container in accordance with licensed collector's sorting instructions.

Product/Packaging disposal recommendations	:	Do not discharge into surface water. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle by distillation. Incinerate under surveillance with energy recovery. Obtain the consent of pollution control authorities before discharging to wastewater treatment plants.
Additional information	:	Flammable vapors may accumulate in the container.

SECTION 14: Transport information

The information in this section is for reference only and should not take the place of a bill of lading specific to an order.

Department of Transportation (DOT)

In accordance with DOT

Transport document description	:	UN1120 Butanols (When shipping in quantities greater than 5,000 lbs, RQ must be added to the shipping description.), 3, III
UN-No.(DOT)	:	UN1120
Proper Shipping Name (DOT)	:	Butanols When shipping in quantities greater than 5,000 lbs, RQ must be added to the shipping description.
Class (DOT)	:	3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Packing group (DOT)	:	III - Minor Danger
Hazard labels (DOT)	:	3 - Flammable liquid

DOT Packaging Non Bulk (49 CFR 173.xxx)	:	203
DOT Packaging Bulk (49 CFR 173.xxx)	:	242
DOT Special Provisions (49 CFR 172.102)	:	B1 - If the material has a flash point at or above 38 C (100 F) and below 93 C (200 F), then the bulk packaging requirements of 173.241 of this subchapter are applicable. If the material has a flash point of less than 38 C (100 F), then the bulk packaging requirements of 173.242 of this subchapter are applicable. IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672). T2 - 1.5 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / 1 + a (tr - tf) Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	150
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	60 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	220 L
DOT Vessel Stowage Location	:	A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.
Other information	:	No supplementary information available.

Transportation of Dangerous Goods

Transport by sea

Transport document description (IMDG)	:	UN 1120 Butanols, 3, III
UN-No. (IMDG)	:	1120

Proper Shipping Name (IMDG)	:	Butanols
Class (IMDG)	:	3 - Flammable liquids
Packing group (IMDG)	:	III - substances presenting low danger
EmS-No. (1)	:	F-E
EmS-No. (2)	:	S-D

Air transport

Transport document description (IATA)	:	UN 1120 Butanols, 3, III
UN-No. (IATA)	:	1120
Proper Shipping Name (IATA)	:	Butanols
Class (IATA)	:	3 - Flammable Liquids
Packing group (IATA)	:	III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

N. Butyl Alcohol (71-36-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	5000 lb
SARA Section 311/312 Hazard Classes	Health hazard - Specific target organ toxicity (single or repeated exposure) Physical hazard - Flammable (gases, aerosols, liquids, or solids)

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

n-Butanol	CAS-No. 71-36-3	100%

15.2. International regulations

CANADA
No additional information available

EU-Regulations
No additional information available

National regulations
No additional information available

15.3. US State regulations

N. Butyl Alcohol (71-36-3)	
State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 11/01/2018

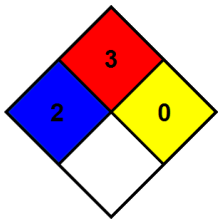
Full text of H-phrases:

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

NFPA health hazard : 2 – Materials that under emergency conditions, can cause termporary incapacitation or residual injury.

NFPA fire hazard : 3 – Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions.

NFPA reactivity : 0 – Material that in themselves are normally stable, even under fire conditions.



SDS US (GHS HazCom 2012)