

MSDS – MATERIAL SAFETY DATA SHEET

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BUTYL ALCOHOL, NORMAL

1. Product Identification

Synonyms: 1-Butanol; propyl carbinol; butanol; n-butyl alcohol

CAS No.: 71-36-3

Molecular Weight: 74.12

Chemical Formula: CH₃(CH₂)₂CH₂OH

2. Composition/Information on Ingredients

| Ingredient | CAS No | Percent | Hazardous |
|-----------------|---------|-----------|-----------|
| n-Butyl Alcohol | 71-36-3 | 99 - 100% | Yes |

3. Hazards Identification

Emergency Overview

WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LIVER AND KIDNEYS.

SAFETY DATA Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)

Flammability Rating: 2 - Moderate

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD;
PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Butyl alcohols have produced few cases of poisoning in industry because of their low volatility. Causes irritation to upper respiratory tract. Difficult breathing, coughing, headache, dizziness, and drowsiness may occur. May be absorbed into the bloodstream with symptoms similar to ingestion.

Ingestion:

May have narcotic effect. May cause abdominal pain, nausea, headache, dizziness, and diarrhea. Large doses may affect kidneys and liver. May affect hearing. Estimated mean lethal dose is 3 - 7 ounces.

Skin Contact:

An irritant to the skin, causing a loss of natural oils. Can be absorbed through skin with symptoms paralleling those from ingestion.

Eye Contact:

Vapors can be irritating, causing tearing and pain. Splashes cause inflammation and blurred vision.

Chronic Exposure:

Prolonged skin contact may cause drying and cracking of skin. Hearing loss has been reported in workers chronically exposed to butyl alcohol. May affect sense of balance, liver and kidneys.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and

upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Flash point: 37C (99F) CC

Autoignition temperature: 343C (649F)

Flammable limits in air % by volume:

lel: 1.4; uel: 11.2

Flammable. Dangerous fire hazard when exposed to heat or flame.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.

Fire Extinguishing Media:

Dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to

avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

-OSHA Permissible Exposure Limit (PEL):

100 ppm

-ACGIH Threshold Limit Value (TLV):

20 ppm (TWA)

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless solution.

Odor:

Strong characteristic, mildly alcoholic odor.

Solubility:

9 mL/100 mL water @ 25C

Specific Gravity:

0.81 @ 20C/4C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

118C (244F)

Melting Point:

-89C (-128F)

Vapor Density (Air=1):

2.6

Vapor Pressure (mm Hg):

5 @ 20C (68F)

Evaporation Rate (BuAc=1):

0.46

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers, strong mineral acids, halogens, aluminum, chromium trioxide, alkali metals.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Oral rat LD50: 790 mg/kg; inhalation rat LC50: 8000 ppm/4H; skin rabbit LD50: 3400 mg/kg; irritation, standard Draize, skin, rabbit, 20 mg/24H moderate; irritation, standard Draize, eye, rabbit, 2 mg/24H severe; investigated as a mutagen, reproductive effector.

| Ingredient | ---NTP Carcinogen--- | | |
|---------------------------|----------------------|-------------|---------------|
| | Known | Anticipated | IARC Category |
| n-Butyl Alcohol (71-36-3) | No | No | None |

12. Ecological Information

Environmental Fate:

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material may evaporate to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into water, this material is expected to readily biodegrade. This material has a log octanol-water partition coefficient of less than 3.0. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.

Environmental Toxicity:

The LC50/96-hour values for fish are over 100 mg/l. The EC50/48-hour values for daphnia are over 100 mg/l. This material is not expected to be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: BUTANOLS

Hazard Class: 3

UN/NA: UN1120

Packing Group: III

Information reported for product/size: 2.5L

International (Water, I.M.O.)

Proper Shipping Name: BUTANOLS

Hazard Class: 3

UN/NA: UN1120

Packing Group: III

Information reported for product/size: 2.5L

15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                               TSCA  EC   Japan  Australia
-----
n-Butyl Alcohol (71-36-3)                Yes  Yes  Yes    Yes
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-----\Chemical Inventory Status - Part 2\-----
Ingredient                               --Canada--
                               Korea  DSL   NDSL  Phil.
-----
n-Butyl Alcohol (71-36-3)                Yes   Yes   No    Yes
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-----\Federal, State & International Regulations - Part 1\-----
Ingredient                               -SARA 302-  -----SARA 313-----
                               RQ   TPQ   List  Chemical Catg.
-----
n-Butyl Alcohol (71-36-3)                No   No    Yes   No
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-----\Federal, State & International Regulations - Part 2\-----
Ingredient                               -RCRA-      -TSCA-
                               CERCLA      261.33     8(d)
-----
n-Butyl Alcohol (71-36-3)                5000      U031      No
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Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 3[Y]E

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **1** Flammability: **3** Reactivity: **0**

Label Hazard Warning:

WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LIVER AND KIDNEYS.

Label Precautions:

Keep away from heat, sparks and flame.
Keep container closed.
Avoid breathing vapor or mist.
Use only with adequate ventilation.
Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Label First Aid:

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

Product Use:

Laboratory Reagent.

Revision Information: No Changes.

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