

1. PRODUCT NAME: N-Butyl Alcohol
2. CHEMICAL NAME:
3. SYNONYMS: Butanol
4. CAS NUMBER: 71-36-3
5. COMPOSITION: N-Butyl Alcohol (71-36-3) - 100%

**IN CASE OF
TRANSPORT EMERGENCY
CONTACT CHEMTREC
USA: 1-800-424-9300
INTERNATIONAL: 1-703-527-3887**

6. PROPERTIES: ODOR & APPEARANCE: clear, colorless liquid with choking odor
ODOR THRESHOLD: not known
VAPOUR PRESSURE: below 5.5mmHg/0.73kPa (20 c)
EVAPORATION RATE (butyl Acetate=1): 0.47
VAPOR DENSITY (air=1): 2.6
BOILING RANGE: 118 c/244 F
FREEZING POINT: -89 c/-129 F
SPECIFIC GRAVITY: 0.810 (20/20 c)
WATER SOLUBILITY: 77 grams per litre (20 c)
IN OTHER SOLVENTS: most organic solvents
VISCOSITY: 3 centipoise (20 c)
PH: none – (does not liberate hydrogen ions when dissolved)
FLASH POINT: 37 c/98 F (closed cup)
AUTOIGNITION TEMPERATURE: 343 c/650 F
FLAMMABLE LIMITS: 1.4% - 11.2% not known
COMBUSTION PRODUCTS: carbon monoxide, nitrogen oxides, smoke, part oxidized hydrocarbon fragments
FIREFIGHTING PRECAUTIONS: foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water - water jet may spread flames; firefighters must wear SCBA
STATIC DISCHARGE: will not accumulate a static charge
MECHANICAL IMPACT: not sensitive
CHEMICAL STABILITY: stable; will not polymerize
REACTIVE WITH: strong oxidizing agents, vigorous reaction with: halogens, alkali metals, perchlorates, strong acids, acid anhydrides, isocyanates; corrosive to aluminium above 75 c
DECOMPOSITION PRODUCTS: none apart from Hazardous Combustion Products

7. HAZARDS: HMIS (U.S.A.): Health – 2, Fire – 3, Reactivity - 0

8. FIRE FIGHTING INFORMATION: Foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water - water jet may spread flames; firefighters must wear SCBA.

9. PERSONAL PROTECTION MEASURES: HANDS: butyl rubber or “Viton” gloves recommended – others also suitable, consult supplier
EYES: safety glasses with side shields or chemical goggles – always protect the eyes
VENTILATION: mechanical required to maintain air concentration below TWAEV (above, Part 2)
CLOTHING: no special protective clothing required

10. FIRST AID PROCEDURES: SKIN: Wash with soap and plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.
EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.
INHALATION: Remove from contaminated area promptly. CAUTION: Rescuer must not endanger



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himself! If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION: Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.
NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. The risk and danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity product. The stomach should only be emptied under medical supervision, after the installation of an airway to protect the lungs.

11. EXPOSURE IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH)

LIMITS: 1400 ppm [based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.]

ALLOWABLE TOLERANCES

Residues of n-butanol are exempted from the requirement of a tolerance when used as a solvent, cosolvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. n-Butanol is exempted from the requirement of a tolerance when used as a solvent, for blended emulsifiers in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals.

OSHA STANDARDS

Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 100ppm (300mg/cu m). Vacated 1989

OSHA PEL Ceiling limit: 50 ppm (150 mg/cu m), skin designation, is still enforced in some states.

NIOSH RECOMMENDATIONS

Recommended Exposure Limit: (15 min) Ceiling value: 50 ppm (150mg/cu m) [skin].

THRESHOLD LIMIT VALUES

Ceiling Limit 50ppm, skin

Notice of Intended Change!

effective for 20

00: These substances, with their corresponding values and notations, comprise those for which a limit has been proposed for the first time or for which a change in the Adopted listing has been proposed. In each case, the proposed values should be considered trial values for the year following ratification by the ACGIH Board of Directions. If, during the year, no evidence comes to light that questions the appropriateness of these proposals, the value will be reconsidered for adoption as TLVs Time Weighted Avg (TWA): 20ppm; Short Term Exposure Limit (STEL): 50 ppm.

TWAEV ppm: 20

LD50 ORAL: 790

SKIN (mg/kg): 3400

LC50ppm INHALATION: 8000

12. TOXICOLOGICAL EFFECTS ACUTE EXPOSURE

INFORMATION: SKIN CONTACT: slightly irritating

SKIN ABSORPTION: slight; no toxic effects likely by this route

EYE CONTACT: highly irritating, probably will not damage eyes

INHALATION: vapor irritating above 50-200ppm. Low vapor pressure greatly reduces risk; may cause headache, dizziness & drowsiness – sufficiently irritating that exposure to concentrations producing such symptoms is unlikely

INGESTION: headache, dizziness, intoxication, nausea, eventual coma (at high doses)

EFFECTS OF CHRONIC EXPOSURE

GENERAL: prolonged exposure may cause skin cracking and dermatitis, weak evidence of hearing impairment on prolonged exposure to 25-80ppm



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SENSITISING: not a sensitizer – single reported case of supposed butanol sensitivity
REPRODUCTIVE EFFECT: experimental fetotoxicity, but only at doses causing maternal toxicity; no evidence of mutagenic activity; no known effect in humans
SYNERGISTIC WITH: not known
LD50: 790mg/kg (oral, rat) 1200mg/kg (oral, hamster, 3484mg/kg (oral, rabbit), 3400mg/kg (skin, rabbit)
LC50: 8000ppm (inhalation, rat)

13. ECOLOGICAL INFORMATION: This product cannot accumulate in living tissue – this product is readily and rapidly biodegradable in the presence of oxygen; estimated half-life in air of 48 hours, in sewage water from 3-8 days (var. reports); 93% biodegradation in 24 hours reported.
14. DISPOSAL CONSIDERATIONS: DO NOT FLUSH TO SEWER; may be incinerated in approved facility after mixing with flammable product.
15. CARCINOGENIC PROPERTIES & NOTIFICATIONS: Not considered as a tumorigen or a carcinogen in humans or animals.
16. TRANSPORT INFORMATION: USA 49 CFR
Product identification number: UN – 1120
Shipping name: butanols
Classification: Class 3; packing group III
Label: Class 3, flammable liquid
Class: B2, D 2B
17. HANDLING & STORAGE: Store in a cool dry environment, away from sources of ignition, heat and oxidizing agents. Use with adequate ventilation. Do not cut, drill, weld or grind on or near this container. Avoid prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower should be available near the workplace.
18. ACCIDENTAL RELEASE MEASURES: LEAK PRECAUTION: dyke to control spillage and prevent environmental contamination. fire potential: blanket spill with foam as a precaution against accidental ignition. Take extremely care to avoid sparks – do not operate (turn on OR off) electrical appliances near spill, unless explosion proof.
HANDLING SPILL: ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep and pick up using plastic aluminium shovel, & store in closed containers for recycling or disposal.
19. REGULATORY INFORMATION: IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH)
1400 ppm [based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.]
ALLOWABLE TOLERANCES
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NIOSH RECOMMENDATIONS

Recommended Exposure Limit: (15 min) Ceiling value: 50 ppm (150mg/cu m) [skin].

THRESHOLD LIMIT VALUES

Ceiling Limit 50ppm, skin

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OTHER OCCUPATIONAL PERMISSIBLE LEVELS

Max allowable concn (MAC) USSR 10mg/cu m

ATMOSPHERIC STANDARDS

This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. n-Butyl alcohol is produced, as an intermediate or final product, by process units covered under this subpart.

STATE DRINKING WATER GUIDELINES

Michigan 910 ug/l [QR] [REF-129]

Minnesota 700 ug/l [QR] [REF-129]

Florida 700 ug/l [QR] [REF-129]

CERCLA REPORTABLE QUANTITIES

Persons in charge of vessels of facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 5000 lb or 2270 kg. The NRC toll free number is (800) 424-8802; In the Washington D.C. metropolitan area (202) 426-2675. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3b)

RCRA REQUIREMENTS

U031; As stipulated in 40 CFR 261.33, when n-butyl alcohol, as a commercial chemical product or manufacturing chemical intermediate or an off-specification commercial chemical product or a manufacturing chemical intermediate, becomes a waste, it must be managed according to Federal and/or State hazardous waste regulations. Also defined as a hazardous waste is any residue, contaminated soil, water, or other debris resulting from the cleanup of a spill, into water or on dry land, of this waste. Generators of small quantities of this waste may qualify for partial exclusion from hazardous waste regulations (40 CFR 261.5). F003; When n-butyl alcohol is a spent solvent, it is classified as a hazardous waste from a non-specific source (F003), as stated in 40 CFR 261.31, and must be managed according to State and/or Federal hazardous waste regulations.

FIFRA REQUIREMENTS

Residues of n-butyl are exempted from the requirement of tolerance when used as a solvent or cosolvent in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to growing crops or to raw agricultural commodities after harvest. n-Butanol is exempted from the requirement of a tolerance when used as a solvent for blended emulsifiers in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals.

FDA REQUIREMENTS

n-Butyl alcohol (without residue) may be used in inks for making food supplements in tablet form, gum, and confectionary.