



5515 North Service Rd. #306
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megaloid.ca



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1. IDENTIFICATION

Name: *n-Butyl Alcohol*

Synonyms: *Normal butanol, butyl alcohol, 1-butanol, butyric alcohol, and others*

Product Uses: *Solvent in coatings, organic chemical synthesis, & others*

Supplier: *Megaloid Laboratories Limited*
Identifier: *5515 North Service Road # 306
Burlington, ON L7L 6G4*

EMERGENCY INFORMATION: *Call CHEMTREC - (800) 424-9300
(CCN# 693764)*

2. HAZARD IDENTIFICATION

GHS Class <i>(category)</i>	flammable <i>(3)</i>	acute oral <i>(4)</i>	skin irritant <i>(2)</i>	eye irritant <i>(1)</i>	STOT <i>(3)</i>	STOT <i>(3)</i>
Signal Word	DANGER					
Hazard Statements	<i>Flammable liquid and vapour (H226)</i>	<i>Harmful if swallowed (H302)</i>	<i>Causes skin irritation (H315)</i>	<i>Causes serious eye damage (H318)</i>	<i>May cause respiratory tract irritation (H335)</i>	<i>May cause drowsiness or dizziness (H336)</i>

Hazardous Pictograms



GHS Precautionary Statements for Labelling

Prevention:

P210 *Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*

P240 *Ground and bond container and receiving equipment.*

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P241	Use explosion-proof electrical, ventilating, and lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing vapours.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
Response:	
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.
P332 P313	If skin irritation occurs: Get medical advice/attention
P370+P378	In case of fire use alcohol-resistant foam to extinguish.
Storage:	
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
Disposal:	
P501	Dispose of contents and container in accordance with local, regional, national and international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	CAS No.	%	Other Identifiers
1-Butanol	71-36-3	100	EC # 200-751-6

4. FIRST-AID MEASURES

Inhalation

Remove from contaminated area promptly. **CAUTION: Rescuer must not endanger himself!** If breathing stops, administer artificial respiration and seek medical aid promptly.

Skin Contact

Wash with plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.

Eye Contact

Wash eyes with plenty of water, holding eyelids open. Seek medical assistance if there is any irritation.

Ingestion

Give plenty of water to dilute product. Do not induce vomiting. Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Most important symptoms and effects, both acute and delayed

Harmful if swallowed.

Causes skin irritation.

Causes serious eye damage.

May cause respiratory irritation.

May cause drowsiness or dizziness.

Notes to physician

Treat symptomatically

First-aid Comments

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media

Foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water - water jet spreads flames.

Unsuitable Extinguishing Media

Do not use water jet - spreads fire.

Specific Hazards Arising from the Product

Carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments.

Special Protective Equipment and Precautions for Fire-fighters

Firefighters must wear SCBA Full Bunker Gear.

Static Charge Accumulation

Cannot accumulate a static charge on agitation or pumping.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Workers involved in spill clean-up must wear respirators with organic vapour cartridge; use a fresh cartridge every time restrict access to area until completion of cleanup. Restrict access to area until completion of cleanup. Ensure cleanup is conducted by trained personnel only. Wear adequate personal protective equipment. Ventilate area. Extinguish or remove all ignition sources. Notify government occupational health and safety and environmental authorities.

Methods and materials for containment and cleaning up

Leak Precaution: dyke to control spillage and prevent environmental contamination handling
 Spill: ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal.

Environmental Precautions

It is good practice to prevent releases into the environment. Do not allow into any sewer, on the ground or into any waterway. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.

7. HANDLING & STORAGE

Precautions for Safe Handling

Avoid creating or breathing product vapour. If vapour is created in use, install adequate exhaust ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator with organic vapour cartridge. Empty containers may contain a flammable / explosive vapour. Always ensure that containers, whether empty or full, are tightly sealed unless in use. Always use non-sparking bronze or aluminum hand tools. All electrical and mechanical equipment (including lighting, switchgear and forklift trucks) used with or around this product must be explosion-proof. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container, it is prudent to ground or electrically bond the source container, the receiving container, & transfer pump before transferring contents. Avoid generating vapour or mist. Empty containers may contain a flammable or explosive vapour. Always ensure that containers, empty or full, are tightly sealed unless in use.

Conditions for Safe Storage

Store as small a quantity as possible in a cool, dry environment, well ventilated and away from sources of ignition and oxidising agents.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV	20ppm / 61mg/m ³	Ontario STEV	Not listed
AGGIH TLV	20ppm / 61mg/m ³	ACGIH STEL	Not listed
OSHA PEL	50ppm / 150mg/m ³	OSHA STEL	Not listed

Ventilation	mechanical ventilation may be required to control airborne titre; depending on handling procedures
Hands	butyl or "Viton" gloves recommended – <i>other types may also protect; consult supplier to confirm suitability</i>
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
Clothing	wear impermeable (above) apron, boots, & long sleeves if there is any danger of splashing

9. PHYSICAL & CHEMICAL PROPERTIES

Odour & Appearance	clear, colourless liquid with sweet, sharp, choking (<i>highly irritating</i>) alcohol odour
Odour threshold	1-10ppm – <i>varies widely</i>

pH	none – (does not liberate hydrogen ions when dissolved)
Melting point/Freezing point	-89°C / -129°F
Initial boiling point/boiling range	118°C / 244°F
Flash point	37°C / 98°F (closed cup)
Evaporation rate (<i>Butyl Acetate = 1</i>)	0.5
Flammability (solid; gas)	no data available
Lower flammable/explosive limit	1.4%
Upper flammable/explosive limit	11.2%
Vapour pressure	10 hPa at 20°C (68°F) Literature
Vapour density (<i>air = 1</i>)	2.6
Relative density (<i>water = 1</i>)	0.81 at 20°C (68°F) / 20°C Literature
Water Solubility	77g/L (20°C / 68°F); 74g/L (25°C / 77°F)
Partition coefficient – n-octanol/water	0.88
Auto ignition temperature	343°C / 650°F
Decomposition temperature	not known – <i>no decomposition below the Autoignition Temperature</i>
Viscosity	3.0 centipoise (20°C / 68°F); 2.6 centipoise (25°C / 77°F)
Conversion Factor	1ppm = 3.03g/m ³
Molecular Weight	74 grams per mole
Molecular Formula	C4-H10-O

10. STABILITY AND REACTIVITY

Reactivity

Dangerously Reactive with - strong oxidising agents; sodium or potassium metal; halogens (chlorine etc.), isocyanates, acids, acid anhydrides, or acid chlorides, lithium aluminum hydride

Also Reactive With - aluminium at above 75°C to form flammable hydrogen gas; acids or acid anhydrides; forms explosive compounds with perchlorates; attacks some plastics (PVC, ABS at high temp.)

Chemical Stability

Stable; will not polymerize

Possibility of Hazardous Reactions

Polymerization will not occur.

Conditions to avoid

Exposure to elevated temperatures can cause product to decompose. Avoid static discharge.

Incompatible materials

Halogens, strong acids, strong oxidizers

Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity	
Skin Contact	mild to moderate irritant
Skin Absorption	yes; no toxic effects likely by this route
Eye Contact	severe irritant; corrosive in 2 of 4 reports; vapour irritating above 50ppm; eye inflammation & blurred vision above 100ppm
Inhalation	irritating at 25ppm (cough); very irritating at 50ppm, which may also cause headache, dizziness, drowsiness
Ingestion	may cause headache, dizziness, drowsiness, intoxication – <i>not a route of industrial exposure</i>
LD₅₀ (oral)	790mg/kg (♂rat), 2020mg/kg (♀rat), 2000, 2510, 4360 & 8000mg/kg (rat), 2680mg/kg (mouse), 1200mg/kg (hamster), 3400 & 3485mg/kg (rabbit),
LD₅₀ (skin)	3400, 4200 & 5300mg/kg (rabbit)
LC₅₀ (inhalation)	<8000ppm (rat) – 4hr

11. TOXICITY, CONTINUED

General

Prolonged exposure may cause dermatitis; equivocal evidence that prolonged exposure to >80ppm **with** unprotected noise exposure may cause hearing loss

Sensitising

Not a sensitiser in humans or animals

Carcinogenicity

Not a carcinogen. IARC: Not specifically listed. ACGIH®: Not specifically designated. NTP: Not specifically listed. OSHA: Not specifically listed.

Key to Abbreviations

ACGIH® = American Conference of Governmental Industrial Hygienists. IARC = International Agency for Research on Cancer. NTP = National Toxicology Program. OSHA = US Occupational Safety and Health Administration

Reproductive Effect

No known effect in humans or animals (*an oral and inhalation study on rats observed fetotoxicity and teratogenicity but only at doses causing maternal toxicity*)

Mutagen

No known effect on humans or animals

Synergistic with

Aromatic hydrocarbons and chlorinated solvents

12. ECOLOGICAL INFORMATION

Bioaccumulation	not a bioaccumulator; in rats, 83% of butanol dose metabolised within 24 hours
Biodegradation	biodegrades readily & rapidly in the presence of oxygen; from 93% in 5 days to 98% in 19 days
Abiotic Degradation	reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 6-36hours (several reports)
Mobility in soil, water	water soluble and will move readily in soil and water
Aquatic Toxicity	
LC₅₀ (Fish, 96hr)	1376, 1400, 1730 & 1940mg/litre (Pimephales promelas), 2250-2400mg/litre (Alburnus alburnus), 1200-1770 & 1834mg/litre (Leuciscus idus – 48hr)
LC₅₀ (Crustacea, 24hr)	2950mg/litre (Artemia salina), 2100mg/litre (Nitocra spinipes) – <i>note this is 96hr</i>
EC₅₀ (Crustacea, 48hr)	1328, 1760 & 1983mg/litre (Daphnia magna), 1900 – 2300mg/litre (Nitocra spinipes) – <i>note this is 96hr</i>
EC₅₀ (Algae)	875mg/litre (Scenedesmus quadricauda), 100mg/litre (Microcystis aeruginosa), 225mg/litre (Pseudokirchneriella subcapitata), 8500mg/litre (Chlorella pyrenoidosa), >500mg/litre (Desmodesmus subspicatus), 225mg/litre (Pseudokirchnerella subcapitata)
EC₁₀ (Bacteria)	2250mg/litre (Pseudomonas putida), >990mg/litre (“activated sludge”)
EC₅₀ (Bacteria)	4390mg/litre (Pseudomonas putida), 2040mg/litre (Photobacterium phosphoreum)

13. DISPOSAL

Waste Disposal

Do not flush to sewer, recycle solvent if possible, local regulations may permit disposal in sanitary landfill, may be incinerated in approved facility after mixing with a suitable flammable waste

Containers

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Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.

Pails must be vented and thoroughly dried prior to crushing and recycling.

IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs).

Steel containers must be inspected, pressure tested & recertified every 5 years.

***Never cut, drill, weld or grind on or near this container,
even if empty***

14. TRANSPORT INFORMATION

Canada TDG	UN / PIN #	1120	
AND	Shipping Name	Butanols	
U.S.A. 49 CFR	Class & Packing Group	3, III	

Marine Pollutant ERAP Required (CA only)	Not a marine pollutant
Emergency Response Guide No.	No
Reportable Quantity (RQ – USA only)	129
	5,000 lbs (2,270kg)

Important Note: Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.

15. REGULATORY INFORMATION

Canada DSL	On Inventory
U.S.A. TSCA	On Inventory
Europe EINECS	On Inventory

Canada Regulations:

CEPA - National Pollutant Release Inventory (NPRI)
Part 1A.

U.S.A. Regulations:

Immediately Dangerous to Life or Health (IDLH): 1400 ppm

Allowable Tolerances: Residues of n-butanol are exempted from the requirement of a tolerance when used 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.

Use: solvent, co solvent. Residues of n-butanol are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. Use: solvent for blended emulsifiers.

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

NIOSH Recommendations: Recommended Exposure Limit: 15 Minute Ceiling value: 50 ppm (150 mg/cu m) (skin). Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 20 ppm. Excursion Limit Recommendation: Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded.

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 a final product, by process units covered under this subpart.

CERCLA Reportable Quantities: Persons in charge of vessels or 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 toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b).

RCRA Requirements: 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). When n-butyl alcohol is a spent non-halogenated solvent, it is classified as a hazardous waste from a nonspecific 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-butanol are exempted from the requirement of a tolerance when used 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.

Use: solvent, co solvent. Residues of n-butanol are exempted from the requirement of a tolerance when used in accordance with good agricultural practice as inert (or occasionally active) ingredients in pesticide formulations applied to animals. Use: solvent for blended emulsifiers.

FDA Requirements: n-Butyl alcohol (without residue) may be used in inks for marking food supplements in tablet form, gum, and confectionery.

SARA 311: Acute health: Yes; Chronic health: Yes; Fire: Yes; Sudden release of pressure: No; Reactive: No

US State Regulations

Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with

The applicable state(s):

Pennsylvania - Listed

State Drinking Water Guidelines: (MN) MINNESOTA 700 ug/L; (FL) FLORIDA 700 ug/L

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

International Regulations

International Inventories

Listed on the chemical inventories of the following countries or qualifies for an exemption:

Australia (AICS)
China (IECSC)
Japan (ENCS)
Japan (ISHL)
Korea (KECI)
Philippines (PICCS)

16. OTHER INFORMATION

NFPA RATING	Health 2	Flammability 3	Instability 0
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Prepared for Megaloid Laboratories by Rob Cangiano
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Revision Dates: August 2006, August 2009, August 2012, August 2015, August 2018, October 2019

Key to Abbreviations	ACGIH® = American Conference of Governmental Industrial Hygienists AIHA® = AIHA® Guideline Foundation HSDB® = Hazardous Substances Data Bank IARC = International Agency for Research on Cancer NIOSH = National Institute for Occupational Safety and Health NTP = National Toxicology Program OSHA = US Occupational Safety and Health Administration RTECS® = Registry of Toxic Effects of Chemical Substances
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS). NIOSH Pocket Guide database. National Institute for Occupational Safety and Health. Available from Canadian Centre for Occupational Health and Safety (CCOHS). Registry of Toxic Effects of Chemical Substances (RTECS®) database. Dassault Systèmes/BIOVIA ("BIOVIA"). Available from Canadian Centre for Occupational Health and Safety (CCOHS).
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