

N - BUTANOL

Section-1 - IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY / UNDERTAKING	
Product Name (Commercial Name)	: N-Butanol, (Normal Butanol)
Uses	: Chemical for Synthesis
A clear colorless liquid with a sweet odor. Less dense than water. Vapors heavier than air.	
Synonyms	: N Butyl Alcohol , 1 Butanol
Manufacturer's Name & Address	: Bharat Petroleum Corporation Limited 4&6, Currimbhoy Road, Ballard Estate Mumbai- 400 001, INDIA
Telephone No.	: 091-22-24176354
Fax No.	: 091-22-24166512/24182511
Emergency Coordination Centre Contact	: BPCL Kochi Refinery, Ambalamugal Kochi Kerala
EMERGENCY CONTACT DETAILS	: BPCL – KOCHI REFINERY, Ambalamugal, Dist. Ernakulam, Kerala, India 091-484-2722061
24*7 Emergency contact No	: +91 9495001031

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Section 2 – HAZARD IDENTIFICATION

OSHA /GHS standards

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



Signal Word : Danger

Hazard statements

H226 Flammable liquid and vapor

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

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.

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P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P280 Wear protective gloves/ eye protection/ face protection.

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/doctor 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.

NFPA HAZARD CODES

NFPA 704

Diamond	Hazard	Value	Description
	 Health	2	Can cause temporary incapacitation or residual injury.
	 Flammability	3	Can be ignited under almost all ambient temperature conditions.
	 Instability	0	Normally stable, even under fire conditions.
	 Special		

(NFPA, 2010)

RATINGS SYSTEM

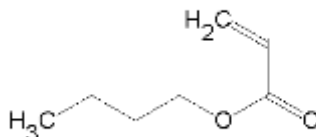
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0 = No Hazard 1 = Slight Hazard 2 = Moderate Hazard
3 = Serious Hazard 4 = Severe Hazard

Section 3 – COMPOSITION & INFORMATION ON INGREDIENTS

Ingredients	CAS No.	EC No.	Percentage
N- Butanol	71-36-3	200-751-6	99.00 % (wt.) min.

Chemical Formula : $C_4H_{10}O$ ($CH_3CH_2CH_2CH_2OH$)



Section 4 – FIRST AID MEASURES

EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

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INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

INGESTION: DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. Be prepared to transport the victim to a hospital if advised by a physician. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital.

Section 5 – FIRE FIGHTING MEASURES

Flash Ignition Temperature	: 29 °C
Auto Ignition Temperature	: 343 °C
Flammable Limits	: Lower. 1.4% : Upper. 11.2%
Suitable Extinguishing Media	: Carbon dioxide, dry chemical powder, or alcohol resistant foam. Water may be effective for cooling, but may not effect extinguishment
Unusual or Explosive Hazards	: Vapor may travel considerable distance to source of ignition and flash back. Container explosion can occur under fire conditions. Explosive vapor/air

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Special Fire Fighting Procedures : mixtures may be formed.
: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Use water spray to cool fire-exposed containers. In advanced or massive fires the area should be evacuated and the fire should be fought from a remote explosion-resistant location.

Firefighting

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

SMALL FIRE: Dry chemical, CO₂, water spray or alcohol-resistant foam.

LARGE FIRE: Water spray, fog or alcohol-resistant foam. Do not use straight streams. Move containers from fire area if you can do it without risk.

FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Section 6 –ACCIDENTAL RELEASE MEASURES

Procedures in case of breakage or leakage : Evacuate area. Shut off all sources of ignition.

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Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent. Collect using non-sparking tools, store in covered containers and remove to safe place. Ventilate area and wash spill site after material pickup is complete. Wash water should be treated before discharge.

As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.

LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet).

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor-suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean, non-sparking tools to collect absorbed material.

LARGE SPILL: Dike far ahead of liquid spill for later disposal. Water spray may reduce vapor, but may not prevent ignition in closed spaces.

Section 7 –HANDLING AND STORAGE

Handling	: Do not breathe vapour. Avoid contact with eyes, skin, and clothing Avoid prolonged or repeated exposure. Provide safety shower and eye bath.
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	<p>Use nonsparking tools</p> <p>Wash thoroughly after handling.</p> <p>Wash contaminated clothing before reuse.</p> <p>Handle under inert gas.</p>
Storage	<p>: Keep container closed.</p> <p>Keep away from heat, sparks, and Open flame. Store under inert gas</p>

Section 8 –EXPOSURE CONTROL & PERSONAL PROTECTION

Long Term exposure Limits	: (UK 2007) No Limit Specified
Short Term Exposure Limits	: (UK2007) 50 ppm
TWA (ACGIH-2012)	: 20 PPM
Personal Protective Equipments.	
Respiratory Protection	: Government approved respirator
Eye Protection	: Chemical safety goggles.
Skin Protection	: Hand Protection Compatible chemical- resistant gloves

Section 9 –PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear colorless liquid
Odor	: Vinous odour
Melting Point	: minus 90 °C
Boiling Point	: 117 °C
Flash Point	: 29 °C
Auto Ignition Temperature	: 343 °C
Explosion Limits: LEL	: 1.4 %

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UEL	: 11.2 %
Vapor Pressure	: 0.58 kPa @ 20 °C
Relative Vapor Density (air)	: 2.55
Specific Gravity	: 0.81
Solubility in Water	: 77 g/l at 20°C
Molecular Weight (ACGIH-2012)	:74.12 g/Mol

Section 10 –CHEMICAL STABILITY AND REACTIVITY INFORMATION

Hazardous Polymerization	: Not applicable
Stability	: Stable
Incompatibilities	: Oxidizing agents Aluminium alkali metals Bases Strong acids Halogens Attacks some plastics, rubbers and coatings
Hazardous Combustion and Decomposition Products	: Carbon monoxide, Carbon dioxide.
Corrosivity	: Not applicable

Section 11 –TOXICOLOGICAL INFORMATION

EYE IRRITATION	: Not available
SKIN IRRITATION	: Liquid can defat the skin.

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RESPIRATORY/ INHALATION	Causes dermatitis : upper respiratory tract.
INGESTION	: Target Organs (Central nervous system, Blood, Ears ,Liver, Kidneys)

Section 12 –ECOLOGICAL INFORMATION

This substance is biodegradable.

Section 13– DISPOSAL CONSIDERATION

Disposal of contaminated product, container residues, and spill clean ups shall be in accordance with applicable local, regional or national regulations.

Local Legislation: Disposal should be in accordance with applicable regional, national, and local laws and regulations. This product should not be dumped, spilled, rinsed or washed into sewers or public waterways.

Recommended disposal methods for the substance / preparation

Product reuse or disposal in accordance with valid waste legislative regulations.

Recommended disposal methods for contaminated packaging

Product is transported in tank-vehicles.

Waste management measures that control exposure of humans and environment

Proceed in accordance with valid health, air and water legislative regulations.

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Waste regulation: Follow local regulation. Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste.

Handle uncleaned containers like the product itself.

Packaging treatment: The empty containers are treated with steam and rinsed with plenty of water. The resulted effluent are treated in the same way as waste. Then clean and empty containers are to be reused in conformity with regulations.

Section 14– TRANSPORT INFORMATION

N-Butanol can be shipped according to transport regulations for dangerous goods, hazard class 3 flammable liquids.

- UN NUMBER : 1120
- HAZCHEM CODE : 3
- UN Hazard Class: 3; UN Pack Group: III

Section 15– REGULATORY INFORMATION

MSDS format on a 16 Section based on guidance provided in:

Indian Regulation:

Manufacture, Storage and Import of Hazardous Chemicals Rule, 1989.

The Factories Act 1948

International Regulations:

European SDS Directive

Labelling according to EC directives

R phrases

10 – flammable

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37/38 – irritating to respiratory system /skin

41 – risk of serious damage to eyes.

67 – vapors may cause drowsiness and dizziness

S phrases

7/9 keep container tightly closed and in a well-ventilated place

13 – keep away from food, drinks and animal feeding stuffs.

26 – in case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Section 16 – OTHER INFORMATION

No specific notes on this product

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End of MSDS