



THE ANDHRA PETROCHEMICALS LIMITED, VISAKHAPATNAM.
MATERIAL SAFETY DATA SHEET (MSDS)
N-BUTANOL

SECTION-1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier:

Material Name: N-BUTANOL

Chemical formula: CH₃CH₂CH₂CH₂OH

CAS. No: 71-36-3 EC No: 200-751-6

Synonyms: Normal Butanol; 1-Butanol; N-Butyl Alcohol; Butan-1-ol; n-Butan-1-ol; 1-Butyl alcohol.

Applications: Used as solvent in manufacturing of paints & coatings, acid curable lacquers. For manufacture of Butyl acetate, Butyl Acrylate, Butyl ester, Plasticizers etc.

Address Details:

Manufacturer	Corporate marketing office/ Supplier
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Name: The Andhra Petrochemicals Limited The Andhra Petrochemicals Limited

Street: P.B.No.1401, Opp: Naval Dockyard P.B.No.1401, Opp: Naval Dockyard

City: Visakhapatnam Visakhapatnam

State/Country: Andhra Pradesh, INDIA Andhra Pradesh, INDIA

Postal Code: 530014 530014

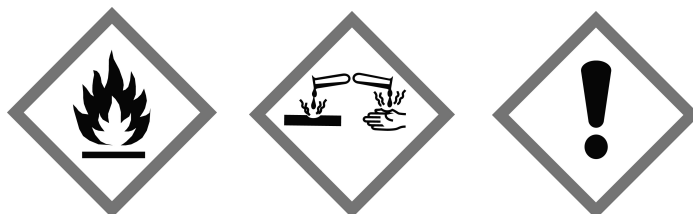
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E-Mail: info.vskp@theandhrapetrochemicals.com mktg.vskp@theandhrapetrochemicals.com

SECTION-2: HAZARD IDENTIFICATION

Classification: (According to Regulation EU 1272/ 2008)
Flammable Liquids: Category 3
Acute Toxicity (Oral): Category 4
Skin Irritation: Category 2
Serious Eye Damage: Category 1
Specific target organ toxicity: Single exposure, Category-3, Respiratory tract irritation.
Specific target organ toxicity: Single exposure, Category-3, Vapors may cause drowsiness & dizziness.
(For general understanding, Hazard severity is highest in Category 1)

GHS Hazard pictograms:



Signal word: Danger

NFPA hazard Codes: (NFPA 704)



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Hazard	Color Code	Value	Description	Diamond
Health		2	Can cause temporary incapacitation or residual injury	
Flammability		3	Can be ignited under ambient temperature conditions	
Stability/Reactivity		0	Normally stable, even under fire conditions	
Special		-	-	
<i>Rating system: 0 = No Hazard, 1 = Slight Hazard, 2 = Moderate Hazard, 3 = Serious Hazard, 4 = Severe Hazard.</i>				
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, 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/ventilating/lighting/...) equipment.			
P242	Use only non-sparking tools.			
P243	Take action to prevent static discharges.			
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.			
P264	Wash hands 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/protective clothing/eye protection/face protection.			
Precautionary Statements (Response):				
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.			
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.			
P332 + P313	If skin irritation occurs: Get medical advice/attention.			



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P362 + P364	Take off contaminated clothing and wash it before reuse.
P301 + P312	IF SWALLOWED: Call a poison center or doctor if you feel unwell.
P330	Rinse mouth.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a poison center or doctor if you feel unwell.
P370 + P378	In case of fire: Use CO ₂ , dry chemical (or) foam to extinguish.

Precautionary Statements (Storage):

P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

Precautionary Statements (Disposal):

P501	Dispose of contents and container to an appropriate treatment and disposal facility in accordance with local and national regulations.
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SECTION-3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients / Composition:

N-BuOH purity:	99.5% (wt min)
Water:	0.1% (wt max)
Acidity as acetic acid:	0.01% (wt max)
Aldehyde (as butyraldehyde):	0.05% (wt max)

SECTION-4: FIRST AID MEASURES

Inhalation:	If Inhaled remove to fresh air; If not breathing give artificial respiration; If breathing is difficult, give oxygen.
Skin Contact:	In case of skin contact flush with copious amounts of water for at least 15 Minutes; Remove contaminated clothing and shoes; Call a physician.
Eye contact:	In case of contact with eyes flush with copious amounts of water for at least 15 Minutes; Assure adequate flushing by separating the eyelids with fingers; Call a Physician.
Ingestion:	If swallowed, wash out mouth with water provided person is conscious; Call a Physician.

SECTION-5: FIRE FIGHTING MEASURES

Flash Point & Method:	29°C & Closed cup
Auto-ignition Temp.:	343°C
Lower Explosion Limit:	1.4% V/V
Upper Explosion Limit:	11.2% V/V

EXTINGUISHING MEDIA

SUITABLE: Carbon dioxide, dry chemical powder, alcohol resistant foam.

UNSUITABLE: Water may be effective for cooling but may not be effective to extinguish.



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SPECIFIC HAZARD(S): Vapor may travel considerable distance to source of ignition and flash back.
Flammable liquid.

EXPLOSION HAZARDS:

Container explosions can occur under fire conditions. In advanced or massive fires, the area should be evacuated, and the fire should be fought from a remote explosion resistant location.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SPECIFIC METHOD(S) OF FIRE FIGHTING:

Use water spray to cool fire-exposed containers.

SECTION-6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL:

Evacuate area; Shut off all sources of ignition.

PROCEDURE(S) OF PERSONAL PRECAUTION(S):

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP:

Cover with dry-lime, sand, or soda ash.

Place in covered containers using non-sparking tools and transport outdoors.

Ventilate the area and wash spill site after material pickup is complete.

Large Spillages: Flush spill area with water spray. Prevent runoff from entering drains, sewers, or streams.

Dike for later disposal.

SECTION-7: HANDLING AND STORAGE

HANDLING:

Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE:

Keep container closed. Store in cool place. Keep away from heat, sparks, and open flame.

SPECIAL REQUIREMENTS:

Handle and store under inert gas may be preferred. Hygroscopic.

SECTION-8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Safety shower and eye bath. Use non-sparking tools. Mechanical exhaust required.

GENERAL HYGIENE MEASURES:

Wash thoroughly after handling. Wash contaminated clothing before reuse.

EXPOSURE LIMITS:

USA OSHA: PEL 150 mg/m³, 50 ppm

ACGIH: TLV 152 mg/m³

UK OEL: STEL 154 mg/m³, 50 ppm

Remarks: Skin

PERSONAL PROTECTIVE EQUIPMENT:	Respiratory Protection:	Approved Breathing Apparatus
	Hand protection:	Compatible chemical resistant gloves.
	Eyes /face protection:	Chemical safety Goggles, Face Shield



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SECTION-9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Oduor and Appearance: Alcohol like odor, Clear liquid

Molecular weight: 74.12

Boiling point: 117°C @ 760 mmHg

Melting Point: Minus 88.9°C

Flash Point & Method: 29°C & Closed cup

Auto-ignition Temp.: 343°C

Explosion Limits: Lower: 1.4% V/V, Upper: 11.2% V/V

Vapor Pressure: 5.5mmHg at 20°C

Relative liquid density: 0.81 (Water: 1)

Relative vapor density: 2.55 (Air: 1)

Viscosity: 3 Pa.s at 20°C

Solubility in water: 7.08% w/w at 30°C

SECTION-10: STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID:

Moisture. Heat, flames, ignition sources and confined spaces.

MATERIALS TO AVOID:

Oxidizing agents, Alkali metals, Bases, Strong acids, Halogens.

HAZARDOUS DECOMPOSITION PRODUCTS:

Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION:

Hazardous polymerization will not occur.

SECTION-11: TOXICOLOGICAL INFORMATION

RTECS
NUMBER: EO1400000

ACUTE TOXICITY Can cause Central nervous system (CNS) depression.
Exposure can cause: Gastrointestinal disturbances. Drying, cracking, or irritation of the skin.

ROUTE OF EXPOSURE

SKIN ABSORPTION: May be harmful if absorbed through the skin.

EYE CONTACT: Causes severe eye Irritation.

INHALATION: May be harmful if inhaled.
Material is irritating to mucous membranes and upper respiratory tract.

INGESTION: Harmful if swallowed.

TARGET ORGAN INFORMATION: Central nervous system, Ears, Liver, Kidneys, Blood.



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SECTION-12: ECOLOGICAL INFORMATION

Persistence & Degradability: Biodegradable.

SECTION-13: DISPOSAL CONSIDERATIONS

Waste treatment methods:

General information: The generation of waste should be avoided or minimized wherever possible. Dispose of the waste and residues in accordance with local regulations.

Disposal methods: Burn in a chemical incinerator equipped with an after burner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state and local environmental regulations.

SECTION-14: TRANSPORT INFORMATION

RID (Rail) /ADR (Road) UN No: 1120, Hazard Class: 3, Packing Group: III
Proper Shipping Name: Butanols

IMDG (Sea) UN No: 1120, Hazard Class: 3, Packing Group: III
Proper Shipping Name: Butanols
Marine Pollutant: No

IATA (Air) UN No: 1120, Hazard Class: 3, Packing Group: III
Proper Shipping Name: Butanols
Inhalation Packing Group I: No

SECTION-15: REGULATORY INFORMATION

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 603-004-00-6 NOTA:6

INDICATION OF DANGER: Xn: Harmful

R-PHRASES: (Risk phrases)

R10 Flammable.

R22 Harmful if swallowed.

R37/38 Irritating to respiratory system and skin.

R41 Risk of serious damage to eyes.

R67 Vapors may cause drowsiness and dizziness.

S-PHRASES: (Safety phrases)

S7/9 Keep container tightly closed and in a well-ventilated place.

S13 Keep away from food, drink, and animal feeding stuffs.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S37/39 Wear suitable gloves and eye/face protection.



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S46	If swallowed, seek medical advice immediately and show this container or label.
S38	In case of insufficient ventilation, wear suitable respiratory equipment.
S42	During fumigation/spraying wear suitable respiratory equipment.
	Use compressed air or fresh air line breathing apparatus in confined spaces.

SECTION-16: OTHER INFORMATION

Information contained in this Material Safety Data Sheet is to the best of knowledge and believed to be reliable but no representation, guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. It is up to the User / Distributor to ensure that the information contained in the Material Safety Data Sheet are based on current knowledge and experience and describe the product only regarding safety requirements and is relevant to the product manufactured / handled or sold. M/s APL makes no warranties, expressed or implied, in respect of the adequacy of this document for any particular purpose concerning the information provided herein.