



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

SECTION-1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION			
Product Identifier:			
Material Name:	I-BUTANOL		
Chemical formula:	(CH ₃) ₂ CHCH ₂ OH		
CAS. No:	78-83-1	E.C No:	201-148-0
Synonyms:	Iso Butanol; Iso Butyl alcohol		
Applications:	Solvent in manufacture of butyl acetate, melamine resins, antibiotics, plasticizers, lacquers, as a flavoring agent in butter, cola, fruit, liquor, rum, and whisky, for derivative esters, as mobile phase in thin layer chromatography, etc.		
Company identifier:			
Address Details:	Manufacturer	Corporate marketing office/ Supplier	
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	
Tel.Nos:	+91-891-2891500/496/414/410	+91-891-2891487/488	
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. 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 and dizziness. <i>(For general understanding, Hazard severity is highest in Category 1)</i>		
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.			
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 & 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.			
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. Immediately call a poison center or doctor.			
P310				
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.			
P332 + P313				
P362 + P364				
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for			



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P312	breathing. 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.

SECTION-3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients / Composition:

I-BuOH purity:	99% (wt min)
Water:	0.2% (wt max)
Acidity as acetic acid:	0.01% (wt max)
Aldehyde (as butyraldehyde):	0.1% (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 immediately wash skin with soap and copious amounts of water.
Eye contact:	In case of contact with eyes immediately 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:	27.8°C & Closed cup
Auto-ignition Temp.:	408°C
Lower Explosion Limit:	1.7% V/V
Upper Explosion Limit:	10.9% 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.

SPECIFIC HAZARD(S): Vapour may travel considerable distance to source of ignition and flash back.
Flammable liquid. Emits toxic fumes under fire conditions.



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EXPLOSION HAZARDS:

Container explosion can occur under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

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

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 OF PERSONAL PRECAUTION:

Wear a respirator, chemical safety goggles, 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.

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: TWA 50 ppm

UK - OEL: 154 mg/m³, 50 ppm, STEL: 231 mg/m³, 75 ppm

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

Approved Breathing Apparatus

Hand protection:

Compatible chemical resistant gloves.

Eyes /face protection:

Chemical safety Goggles, Face Shield

SECTION-9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:

Liquid

Odor and Appearance:

Sweet odor, Colorless clear liquid



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Molecular weight:	74.12
Relative liquid density:	0.805 (Water: 1.0)
Relative vapor density:	2.55 (Air: 1)
Vapor Pressure:	8mmHg at 20°C
Boiling point:	107°C @ 760mmHg
Melting/Freezing Point:	Minus 108°C
Viscosity:	4 Pa.s at 20°C
Flash Point & Method:	27.8°C & Closed cup
Auto-ignition Temp.:	408°C
Lower Explosion Limit:	1.7% V/V
Upper Explosion Limit:	10.9% V/V
<u>SECTION-10: STABILITY AND REACTIVITY</u>	
STABILITY: Stable.	
MATERIALS TO AVOID: Strong oxidizing agents, Acid chlorides, Acid anhydrides.	
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, Carbon dioxide.	
HAZARDOUS POLYMERIZATION: will not occur.	
<u>SECTION-11: TOXICOLOGICAL INFORMATION</u>	
RTECS NUMBER:	NP9625000
SENSITISATION	Causes dermatitis.
ROUTE OF EXPOSURE	
SKIN CONTACT:	Causes skin irritation.
SKIN ABSORPTION:	May be harmful if absorbed through the skin.
EYE CONTACT:	Causes severe eye Irritation.
INHALATION:	May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.
INGESTION:	May be harmful if swallowed.
TARGET ORGAN INFORMATION:	Central nervous system, Liver, Kidneys.
SIGNS AND SYMPTOMS OF EXPOSURE: Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Can cause CNS depression. To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.	
<u>SECTION-12: ECOLOGICAL INFORMATION</u>	



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Persistence & Degradability:	Biodegradable.
<u>SECTION-13: DISPOSAL CONSIDERATIONS</u>	
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. Don't allow to enter in water, wastewater, or soil.
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.
<u>SECTION-14: TRANSPORT INFORMATION</u>	
RID (Rail) /ADR (Road)	UN No.: 1212, Hazard Class: 3, Packing Group: III Proper Shipping Name: Isobutanol
IMDG (Sea)	UN No.: 1212, Hazard Class: 3, Packing Group: III Proper Shipping Name: Isobutanol Marine Pollutant: No Severe Marine Pollutant: No
IATA (Air)	UN No.: 1212, Hazard Class: 3, Packing Group: III Proper Shipping Name: Isobutanol Inhalation Packing Group I: No
<u>SECTION-15: REGULATORY INFORMATION</u>	
CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES	
ANNEX I INDEX NUMBER:	603-108-00-1 NOTA:6
INDICATION OF DANGER:	Xi: Irritant
R-PHRASES: (Risk phrases)	
R10	Flammable.
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.