

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: Isobutanol (IBAL)
Product Description: Isobutanol, IBAL, Isobutyl Alcohol
Chemical Formula: C₄H₁₀O
Recommended Use: Solvent for coatings, printing inks and textile, Raw material for used in extracts for pharmaceutical manufacturing

COMPANY IDENTIFICATION

Supplier: UNION PETROCHEMICAL PUBLIC COMPANY LIMITED
728 Union House Building, Baromratchonnani Rd.,
Bangbumru, Bangplad, Bangkok 10700
Supplier General Contact: +662 881 8288

This (M)SDS is a generic document with no country specific information included.

SECTION 2 HAZARDS IDENTIFICATION

This material is hazardous according to UN GHS Criteria. Classification includes all GHS hazard classes. For hazard categories with two cut-off/concentration limits, classification was based on the higher limit.

GHS CLASSIFICATION:

Flammable liquid: Category 3.
Skin irritation: Category 2.
Serious eye damage: Category 1.
Specific target organ toxicity following single exposure: Category 3.

GHS LABEL ELEMENTS:

Pictogram:



Signal Word: Danger

Hazard Statements:

Physical: H226: Flammable liquid and vapour.
Health: H315: Cause skin irritation.
H318: Cause 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 and No smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. 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 mist / vapours. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: IF SWALLOWED: P312: Call a poison center or doctor/physician if you feel unwell. IF ON SKIN (or hair): P303 + P361 + P353: Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P370 + P378: In case of fire: Use manufacturer/supplier or the competent authority to specify appropriate media for extinction. P302 + P352: Wash with plenty of soap and water. P362: Take off contaminated clothing and wash before reuse. IF INHALED: P304 + P340: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: P305 + P351 + P338: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P332 + P313: If skin irritation persists: Get medical advice/attention.

Storage: P403 + P233: Store in a well-ventilated place. Keep container tightly closed. P235: Keep cool. P405: Store locked up.

Disposal: P501: Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

PRECAUTIONARY PICTOGRAMS



Other hazard information:

HEALTH HAZARDS

Vapours may cause drowsiness and dizziness. Irritating to skin, eyes and respiratory system.

ENVIRONMENTAL HAZARDS

Toxic to aquatic organisms. Toxic effect on fish and plankton. Has the potential to bioaccumulate low. Potential exposure to the air above the surface the explosive vapours.

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3

COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a substance.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Chemical Name	Synonyms Name
ISOBUTANOL	78-83-1	2-Methyl-1-Propanol	2-Methylpropan-1-ol

SECTION 4

FIRST AID MEASURES

INHALATION

Remove to fresh air. If the victim has difficulty breathing or tightness of the chest, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.

SKIN CONTACT

Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes and follow by washing with soap and water if available.

EYE CONTACT

Immediately flush eyes with large amounts of water for at least 10 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

INGESTION

Do not induce vomiting; Do not eat milk and castor oil, transport to nearest medical facility for additional treatment.

SECTION 5

FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Dry chemical powder, Alcohol-resistant foam, and Carbon dioxide.

FIRE FIGHTING

Specific hazard arising from the chemical: May produce toxic fumes of carbon monoxide, carbon dioxide if burning.

Special protective action for fire-fighters: Keep adjacent containers cool by spraying with water.

Protective Equipment: Wear full protective clothing and self-contained breathing apparatus.

FLAMMABILITY PROPERTIES

Flash Point: 27°C

Flammable Limits (Approximate volume % in air): LEL: 1.6 UEL: 12.3

Autoignition Temperature: 410°C

SECTION 6

ACCIDENTAL RELEASE MEASURES

PROTECTIVE MEASURES

Observe all relevant local and international regulations. Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see chapter 8 this Material Safety Data Sheet. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.

CLEAN-UP METHODS

Small spillage (< 200 LT): Transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Large spillage (> 200 LT): Transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

OTHER INFORMATION

Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

SECTION 7

HANDLING AND STORAGE

HANDLING

Avoid contact with skin, eyes, and clothing. Do not breathe vapours. Extinguish any naked flame. Remove ignition sources. Avoid sparks. Do not smoke. The vapour is heavier than air spreads along the ground and distant ignition is possible. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Do not use compressed air for filling, discharging, or handling operations. Handle and open container with care in well-ventilated area. Do not empty into drains.

STORAGE

Must be stored in a diked (bonded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Bulk storage tanks should be diked (bonded). Keep away from aerosols, flammables, oxidizing agents, corrosives. Storage Temperature: Ambient.

PRODUCT TRANSFER

Keep containers closed when not in use. Do not use compressed air for filling, discharging, or handling operations. If positive displacement pumps are used, these must be fitted with a non-integral pressure relief valve. Ensure electrical continuity by bonding and grounding (earthing) all equipment.

RECOMMENDED MATERIALS

For containers, or container linings use mild steel, stainless steel.

ADDITIONAL ADVICE

Containers even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters/Exposure limits:

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit/Standard			Note	Source
ISOBUTANOL		TWA	50 ppm			
ISOBUTANOL		STEL	75 ppm			

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective threshold limit value.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Hand Protection: Butyl rubber gloves, Nature rubber gloves, Neoprene rubber gloves, Nitrile rubber gloves.

Eye Protection: Chemical splash goggles (chemical monogoggles).

Skin and Body Protection: Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.

SECTION 9**PHYSICAL AND CHEMICAL PROPERTIES**

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State:	Liquid
Color:	Clear
Odour:	Specially odour
Odour Threshold:	N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 20°C):	0.803 (ASTM D4052)
Density :	N/D
Flammability (Solid, Gas):	N/D
Flash Point:	27°C
Flammable Limits (Approximate volume % in air):	LEL: 1.6 UEL: 12.3
Autoignition Temperature:	410°C
Boiling Point / Range:	106°C - 108°C
Decomposition Temperature:	N/D
Vapour Density (Air = 1):	2.55
Vapour Pressure:	9.5 mbar at 20°C (ASTM D4052)
Evaporation Rate (n-butyl acetate = 1):	N/D
pH:	N/D
Log Pow (n-Octanol/Water Partition Coefficient):	N/D
Solubility in Water:	85 g/Lt at 20°C
Viscosity:	N/D

OTHER INFORMATION

Freezing Point:	N/D
Melting Point:	-108°C
Molecular Weight:	74.12 G/MOLE
Hygroscopic:	N/D

SECTION 10**STABILITY AND REACTIVITY**

CHEMICAL REACTIVITY: Stable under normal conditions.

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Heat, flame, spark and other ignition sources.

MATERIALS TO AVOID: Oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition is highly dependent on conditions. Carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation. May form explosive peroxides.

HAZARDOUS POLYMERISATION: No

SECTION 11**TOXICOLOGICAL INFORMATION****INFORMATION ON TOXICOLOGICAL EFFECTS**

<u>Route of Exposure</u>	<u>Conclusion/Remarks</u>
Inhalation	
Acute toxicity (Rat): LC50 >6.5 mg/l / 4 hours	Inhalation of vapours or mists may cause irritation to the respiratory system and may cause drowsiness and dizziness.
Ingestion	
Acute toxicity (Rat): LD50 > 2,000 mg/kg	
Skin	
Acute toxicity (Rabbit): LD50 >2,000 mg/kg	Irritating to skin.
Eye	
Irritation: Data available.	Irritating to eyes. Inflammation of the eye is characterized by redness, pain and itching.

CARCINOGENICITY: N/D

SECTION 12**ECOLOGICAL INFORMATION**

The information given is based on data available for the material, the components of the material, and similar materials.

MOBILITY

Dissolves in water. If product enters soil, it will highly mobile and may contaminate groundwater.

PERSISTENCE AND DEGRADABILITY**Biodegradation:**

Material -- Expected to be readily biodegradable.

BIO-ACCUMULATION

Has the potential to bioaccumulate low.

ECOLOGICAL DATA**Ecotoxicity**

Test	Organism Type	Test Results
Aquatic – Acute Toxicity	Fish	Low toxicity LC50 1,520 mg/l
Aquatic – Acute Toxicity	Algae	Low toxicity EC50 1,250 mg/l

SECTION 13**DISPOSAL CONSIDERATIONS****MATERIAL DISPOSAL**

Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classifications and disposal methods in compliance with applicable regulations.

CONTAINER DISPOSAL

Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Refer to Section 7 before handling the product or containers. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recovered or metal reclaimed.

LOCAL LEGISLATION

Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

SECTION 14**TRANSPORT INFORMATION****ROAD/RAIL TRANSPORT ADR/RID**

Proper Shipping Name: ISOBUTANOL
Hazard Class & Division: 3
UN Number: 1212
Packing Group: III
Hazard Symbol: Flammable Liquid

MARITIME TRANSPORT IMO

Proper Shipping Name: ISOBUTANOL
Hazard Class & Division: 3.3
UN Number: 1212
Packing Group: III
Hazard Symbol: Flammable Liquid
Marine Pollutant: No

AIR TRANSPORT IATA/ICAO

Proper Shipping Name: ISOBUTANOL
Hazard Class & Division: 3
UN Number: 1212
Packing Group: III
Hazard Symbol: Flammable Liquid

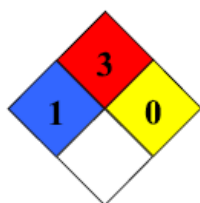
SECTION 15**REGULATORY INFORMATION**

This material is considered hazardous according to the Classification of Chemicals based on Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

EC Label Name: Isobutanol
EC Classification: Flammable
EINECS (EC): 201-148-0
EC Annex I Number: 603-004-00-6
RETCS: NP 9625000

SECTION 16**OTHER INFORMATION**

N/D = Not determined, N/A = Not applicable

NATIONAL FIRE PROTECTION ASSOCIATION (USA)

-  Health
-  Fire Hazard
-  Reactivity
-  Specific Hazard

SDS DISTRIBUTION

The information in this document should be made available to all who may handle the product.



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