



## ISO - BUTANOL

Section-1 - IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY / UNDERTAKING	
Product Name (Commercial Name)	: Iso-Butanol
Uses	: Chemical for Synthesis
A clear colorless liquid with a sweet odor. Less dense than water. Vapors heavier than air.	
Synonyms	: 2-Methyl-1-propanol, Isobutyl alcohol
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

Classification of substance /mixture: Hazard Class and Category code.



FLAMMABLE LIQUIDS,  
Category 3



IRRITANT  
Skin Irritation Category 2




CORROSIVE  
Serious Eye Damage, Category 1

HAZARD STATEMENTS	H226 Flammable liquid and vapour. H315 Causes skin irritation. H318 Causes serious eye damage. H335 May cause respiratory irritation. H336 May cause drowsiness or dizziness.
PRECAUTIONARY STATEMENTS	Precautionary statement(s) P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P280 Wear eye protection/ face protection. P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. P305 + P351 + P338 + P310 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/doctor. P403 + P235 Store in a well-ventilated place. Keep cool.
SIGNAL WORD	Danger
HAZARD CLASS	3, FLAMMABLE LIQUIDS

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### 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

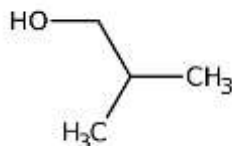
0 = No Hazard      1 = Slight Hazard      2 = Moderate Hazard

3 = Serious Hazard      4 = Severe Hazard

### Section 3 – COMPOSITION & INFORMATION ON INGREDIENTS

Ingredients	CAS No.	EC No.	Percentage
2-Methyl-1-propanol (Iso butanol)	78-83-1	201-148-0	99.00 % (wt.) min.

Chemical Formula : C<sub>4</sub>H<sub>10</sub>O



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### 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.

**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.

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### Section 5 – FIRE FIGHTING MEASURES

Flash Ignition Temperature : 27.8 °C

Auto Ignition Temperature : 390°C

Flammable Limits : 1.2 – 12 vol %

**Suitable Extinguishing Media** : Carbon dioxide, dry chemical powder, or appropriate foam.  
Water may be effective for cooling, but may not effect extinguishment

**Unusual or Explosive Hazards** : Flammable liquid.

Emits toxic fumes under fire conditions. Vapour may travel considerable distance to source of ignition and flash back. Container explosion can occur under fire conditions. Explosive vapour/air mixtures may be formed.

#### Firefighting

CAUTION: This product has a very low flash point: Use of water spray when fighting fire may be inefficient.

SMALL FIRE: Dry chemical, CO<sub>2</sub>, 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

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unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

### Section 6 –ACCIDENTAL RELEASE MEASURES

#### Isolation and Evacuation

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).

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.

#### Non-Fire Response

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.

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### Section 7 –HANDLING AND STORAGE

#### Handling

Protect against physical damage. Sources of ignition such as smoking and open flames are prohibited in places where Iso-butanol is used, handled or stored in a manner that could lead to a fire or explosion hazard. Metal containers would be bonded or grounded for transfers to avoid static sparks. When handling this product avoid non sparking type of tools and equipment, including roof ventilation. Do not use compressed air or oxygen for filling, discharging or handling. Personnel handling this product must wear protective equipment.

#### Storage

Store in a cool, dry, well-ventilated location away from any area where fire may be acute. Outside or detached storage is preferred. Separate from Incompatibles. Storage and Use areas should be non-smoking areas. Drums must be equipped with self-closing valves, nitrogen blanketing. Containers of this material may be hazardous when empty, since they retain product residues and vapors. Observe all warnings and precautions listed for this product.

### Section 8 –EXPOSURE CONTROL & PERSONAL PROTECTION

Long Term exposure Limits	: (UK 2007) 50 ppm
Short Term Exposure Limits	: (UK2007) 75 ppm
TWA (ACGIH-2012)	: 50 PPM
IDLH (NIOSH-2007)	: 1600 PPM

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### Section 9 –PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: Clear Colorless liquid
Odor	: Sweet odour
Melting Point	: minus 90 °C
Boiling Point	: 107 °C
Flash Point	: 27.8 °C
Auto Ignition Temperature	: 390 °C
Explosion Limits : LEL	: 1.2 Vol %
UEL	: 12 Vol %
Vapour Pressure	: 8 mmHg @ 20° C
Relative Vapor Density (air)	: 2.55
Specific Gravity	: 0.8
Solubility in Water	: 8.7 g/l @ 20° C

### Section 10 –CHEMICAL STABILITY AND REACTIVITY INFORMATION

Hazardous Polymerization	: Heat-sensitive, explosible with air in a vaporous/gaseous state when heated (Polymerization).
Stability	: Stabilizer- (MeHQ)  Hydroquinone Monomethyl ether
Incompatibilities	: Unsuitable working materials include steel, copper, zinc, nickel.



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Risk of explosion with: oxidizing agent.

Polymerization initiators, peroxides, oxygen.

### Hazardous Combustion and Decomposition

Products : No information available

Corrosivity : No information available

### Section 11 –TOXICOLOGICAL INFORMATION

LD50/LC50: CAS# 78-83-1: Inhalation, mouse: LC50 = 15500 mg/m<sup>3</sup>/2H;

Inhalation, rabbit: LC50 = 2630 mg/m<sup>3</sup>/4H;

Inhalation, rat: LC50 = 19200 mg/m<sup>3</sup>/4H;

Oral, mouse: LD50 = 3500 mg/kg;

Oral, rabbit: LD50 = 74.1 mg/kg;

Oral, rat: LD50 = 2460 mg/kg;

Skin, rabbit: LD50 = 3400 mg/kg;

Other: Inhalation, rat: LCL0 = 8000 ppm/4H Skin, rabbit: 20 mg/24H moderate Eye, rabbit: 2 mg open severe Eye, rabbit: 2 mg/24H severe

#### Carcinogenicity:

2-Methyl-1-propanol - Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

### Section 12 –ECOLOGICAL INFORMATION

**Mobility:** When released to water this material is slowly soluble and floats on the water level.

Volatilization from water is expected to be moderate .Isobutanol is not expected to get hydrolyzed

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in water due to lack of hydrolysable groups. When released to soil this material both evaporate and leach in to ground water due to its relatively higher vapor pressure and low absorption to soil. In air Isbutanol is expected to get removed by a photochemical oxidation.

**Persistence & degradability:** Halftime in river water is 4 days, half time in air is 20 hours.

Biodegradation 99% in 14 days.

Bioaccumulation: No bioaccumulation is expected.

DO NOT ALLOW TO ENTER WATERS , WASTE WATER OR SOIL

### Section 13– DISPOSAL CONSIDERATION

Whatever cannot be recycled or reclaimed need to be treated as hazardous waste.

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

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

Transport labelling : Label No 3 - Flammable liquids

### 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

This MSDS is issued by, Bharat Petroleum Corporation Limited.

### Disclaimer:

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**Material Safety Data Sheet**  
**Revision – 0**  
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