

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: 1-Butanol
Other means of identification: n-Butanol
Chemical Formula: C₄H₉OH
Recommended Use: This product can be used as an analytical reagent. It can also be used in Organic synthesis, etc.

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.
Acute toxicity, oral: Category 4.
Skin corrosion/irritation: Category 2.
Serious eye damage/eye irritation: Category 1.
Specific target organ toxicity, single exposure: Category 3. (Respiratory tract irritation)
Specific target organ toxicity, single exposure: Category 3. (Narcotic effects)

GHS LABEL ELEMENTS:

Pictogram:



Signal Word: Danger

Hazard Statements:

Flammable liquid and vapor. Harmful if swallowed. Causes skin irritation. Causes serious eye damage. May cause respiratory irritation. May cause drowsiness or dizziness.



Precautionary Statements:

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting/...] equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. Wash ...thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area.

Response: In case of fire: Use water spray, foam or dry powder to extinguish. If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. If on skin (or hair): Rinse skin with water/shower. Specific treatment (see under for further information). If skin irritation occurs: Get medical advice/attention. Take off immediately contaminated clothing and wash it before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. 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.

Storage: Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Contains: 1-BUTANOL

Other hazard information: /

SECTION 3	COMPOSITION / INFORMATION ON INGREDIENTS
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This material is defined as a substance.

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

Name	CAS#	Concentration*
1-BUTANOL	71-36-3	99.9%
WATER	7732-18-5	0.1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4	FIRST AID MEASURES
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INHALATION

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

SKIN CONTACT

Remove contaminated clothing and rinse with plenty of running water

EYE CONTACT

Rinse thoroughly with plenty of running water for at least 15 minutes and consult a physician immediately.

INGESTION

Rinse mouth with water. Consult a physician.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:

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INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED, IF NECESSARY:

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SECTION 5 FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA

Use water spray, dry powder, foam or carbon dioxide.

SPECIAL HAZARDS ARISING FROM THE CHEMICAL

Liquid and vapor are flammable. May explode and burn in high temperature and fire and release toxic fumes.

SPECIAL PROTECTIVE ACTIONS FOR FIRE-FIGHTERS

Wear self-contained breathing apparatus for firefighting if necessary. Use water spray to cool unopened containers. In case of fire in the surroundings, use appropriate extinguishing media.

SECTION 6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

It is recommended that emergency personnel wear protective masks and fire protective overalls. Do not touch the spill directly.

ENVIRONMENTAL PRECAUTIONS

Isolate contaminated areas and restrict access.

METHODS AND MARETIALS FOR CONTAINMENT AND CLEANING UP

Small amount of leakage: adsorption with sand or other inert materials. Do not allow products to enter restricted areas such as sewers. A large amount of leakage: building a dike or digging a pit to contain. Transfer to a tank truck or special collector with an explosion-proof pump and transport to a waste disposal site for disposal.

SECTION 7 HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING

There should be sufficient local exhaust in workplace. Operators should be trained and strictly follow the operating procedures. Operators are advised to wear protective masks, normal protective clothing and rubber gloves. Operators should load and unload lightly during handling to prevent damage to the package. There should be leakage treatment equipment in workplace. There may be harmful residues in empty containers.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store in a cool, dry, well-ventilated warehouse. Keep away from fire and heat. Protect from direct sunlight. The package should be sealed and not exposed to moisture. It should be stored separately from oxidants, flammable materials, etc., and should not be mixed. The storage area should be provided with suitable materials to contain spills.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters:

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

Substance Name	Form	Limit/Standard		Note	Source
1-BUTANOL		TWA	100 mg/m ³		China Occupational Exposure Limits for Hazardous Agents in the Workplace

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

APPROPRIATE ENGINEERING CONTROLS

Close strictly and provide sufficient local exhaust.

INDIVIDUAL PERSONAL PROTECTION

Eye/face protection: Wear a protective mask.

Skin protection: Wear normal protective clothing.

Respiratory protection: Air respirators should be worn during emergency rescue or evacuation.

THERMAL HAZARDS

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SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES
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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: Colorless/Transparent
Odour: /
Odour Threshold: /

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 20°C): 0.81
Flammability (Solid, Gas): /
Flash Point: 34.0°C
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 11.3
Autoignition Temperature: 345°C
Initial Boiling Point and Boiling Range: 117°C
Decomposition Temperature: /
Vapour Density: 2.6
Vapour Pressure: 0.58kPa (20°C)
Evaporation Rate: /
pH: /
Partial coefficient (n-octane/water): 0.9
Solubility(ies): 7.7 g/100 ml (20°C)
Viscosity: /

OTHER INFORMATION

Melting Point: -90°C
Freezing Point: -90°C
Molecular Weight: /
Hygroscopic: /
Coefficient of Thermal Expansion: /

SECTION 10	STABILITY AND REACTIVITY
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REACTIVITY: /

CHEMICAL STABILITY: This material is stable in normal temperature.

CONDITIONS TO AVOID: Spark, static electricity and high temperature.

INCOMPATIBLE MATERIALS: Flammable materials and oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxycarbides.



POSSIBILITY OF HAZARDOUS REACTIONS: Reacts with aluminum when heated to 100°C and strong oxidants such as chromium trioxide. This produces flammable/explosive gas. Attacks some forms of plastic, rubber and coatings.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

<u>Route of Exposure</u>	<u>Conclusion/Remarks</u>
Inhalation	
Toxicity (Rat): LD50 > 24 mg/4 h	/
Ingestion	
Toxicity (Rat): LD50 > 790 mg/kg	/
Irritation: Data available	Accidental ingestion of the material may cause cough, dizziness and throat irritation. Oral intake may cause bellyache, nausea, vomit and other symptoms.
Skin	
Toxicity (Rabbit): LD50 > 3400 mg/kg	/
Irritation: Data available	This material may produce skin irritation. The substance defats the skin, which may cause dryness or cracking.
Eye	
Irritation: Data available	This material may produce eyes irritation.

SECTION 12 ECOLOGICAL INFORMATION

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

MOBILITY IN SOIL

Medium (KOC = 2.443)

PERSISTENCE AND DEGRADABILITY

Low (Half-life = 54 days)

BIOACCUMULATIVE POTENTIAL

Low (BCF = 0.64)

OTHER ADVERSE EFFECTS

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ECOLOGICAL DATA

Ecotoxicity

Test	Duration	Organism Type	Test Results
Aquatic – Toxicity	96 hour(s)	Fish	LC50 1-376 mg/l
Aquatic – Toxicity	48 hour(s)	Crustacea	EC50 1-328 mg/l
Aquatic – Toxicity	96 hour(s)	Algae or other aquatic plants	EC50 225 mg/l
Aquatic – Toxicity	24 hour(s)	Fish	BCF 921 mg/l
Aquatic – Toxicity	48 hour(s)	Crustacea	EC0 1-260 mg/l
Aquatic – Toxicity	504 hour(s)	Crustacea	NOEC 4.1 mg/l

SECTION 13 DISPOSAL CONSIDERATIONS

DISPOSAL METHODS

Dispose this product by safe burial. Damaged containers are prohibited from being reused and should be buried in the prescribed place.

**SECTION 14****TRANSPORT INFORMATION**

UN Number: 1120
UN Proper Shipping Name: BUTANOLS
Transport Hazard Class(es) 3
Packing Group: III
Environmental hazards: /
Special precautions for user: /

SECTION 15**REGULATORY INFORMATION****REGULATIONS**

Workplace Safety and Health Act & Workplace Safety and Health Regulations This safety data sheet is in compliance with the following national standards: GB/T 16483-2008, GB 13690-2009, GB 18218-2009, GB 15258-2009, GB 6944-2012, GB 190-2009, GB/T 191-2008, GB 12268-2012, GA 57-1993, GB/T 15098-2008, GBZ 2.1-2007, GBZ 2.2-2007 as well as the following national regulations: Dangerous Goods Transport Administrative Regulation [Published by the Ministry of Railways, 2008], Dangerous Chemicals Safety Administrative Regulation [Published by the State Council, 2011].

SECTION 16**OTHER INFORMATION**

References: UN Recommendations on the Transport of Dangerous Goods Model Regulations
UN Globally Harmonized System of Classification and Labelling of Chemicals

Form Date: 12-Apr-2019

Note 1: When products contain two or more hazardous substances, Safety Data Sheets should be prepared based on the risk of the mixture.

Note 2: Manufacturer/supplier should ensure the correctness of the information contained in the safety data sheets, and updated in a timely manner.

Note 3: As a result of product features without the existence of certain information or no data available (such as boiling point does not exist for the solid) in the table with "/" logo.

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