

## SAFETY DATA SHEET

## 1. IDENTIFICATION

Product name: 2,3-Butanediol

CAS No. : 513-85-9

Brand: Macklin

Company: Shanghai Macklin Biochemical Co.,Ltd.

Address: Shanghai Pudong Zhangjiang High-tech Park; 1st Building, 68 Huatuo Road; SHANGHAI CHINA

Zip code: 201206

Telephone: +86 21-50706066

Fax: +86 21-50706099

E-mail: sales@macklin.cn; tech@macklin.cn

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## 2. HAZARDS IDENTIFICATION

GHS classification

PHYSICAL HAZARDS

Flammable liquids Category 4

HEALTH HAZARDS

Not classified

ENVIRONMENTAL HAZARDS

Not classified

GHS label elements, including precautionary statements

Pictograms or hazard symbols

Signal word

Warning

Hazard statements

Combustible liquid

Precautionary statements

[Prevention]

Keep away from flames and hot surfaces.

Wear protective gloves and eye/face protection.

[Storage]

Store in a well-ventilated place. Keep cool.

[Disposal]

Dispose of contents/container through a waste management company authorized by the local government.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/mixture: Substance

Components:2,3-Butanediol

CAS No.:513-85-9

Chemical Formula:C<sub>4</sub>H<sub>10</sub>O<sub>2</sub>

## 4. FIRST AID MEASURES

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

Skin contact: Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation or rash occurs: Get medical advice/attention.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present

and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion: Get medical advice/attention if you feel unwell. Rinse mouth.

Protection of first-aiders: A rescuer should wear personal protective equipment, such as rubber gloves and air-tight goggles.

## 5. FIRE-FIGHTING MEASURES

Suitable extinguishing Dry chemical, foam, water in large amounts, carbon dioxide. media: Precautions for firefighters: Fire-extinguishing work is done from the windward and the suitable fire-extinguishing

method according to the surrounding situation is used. Uninvolved persons should evacuate to a safe place. In case of fire in the surroundings: Remove movable containers if safe to do so. Special protective When extinguishing fire, be sure to wear personal protective equipment. equipment for firefighters:

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, Use personal protective equipment. Keep people away from and upwind of spill/leak. protective equipment and Ensure adequate ventilation. Entry to non-involved personnel should be controlled emergency procedures: around the leakage area by roping off, etc. Environmental precautions: Prevent product from entering drains. Methods and materials for Absorb spilled material in a suitable absorbent (e.g. rag, dry sand, earth, saw-dust). containment and cleaning In case of large amount of spillage, contain a spill by bunding. Adhered or collected up: material should be promptly disposed of, in accordance with appropriate laws and regulations. Prevention of secondary Remove all sources of ignition. Fire-extinguishing devices should be prepared in hazards: case of a fire. Use spark-proof tools and explosion-proof equipment.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

Technical measures: Handling is performed in a well ventilated place. Wear suitable protective equipment.

Prevent generation of vapour or mist. Keep away from flames and hot surfaces. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment. Wash hands and face thoroughly after handling.

Use a closed system, ventilation. Advice on safe handling: Avoid contact with skin, eyes and clothing. Conditions for safe storage, including any

### Conditions for safe storage, including any incompatibilities

Storage conditions: Keep container tightly closed. Store in a cool, dark and well-ventilated place. Store under inert gas.

Protect from moisture.

Store away from incompatible materials such as oxidizing agents.

Hygroscopic Packaging material: Comply with laws.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls: Install a closed system or local exhaust as possible so that workers should not be exposed directly. Also install safety shower and eye bath.

### Personal protective equipment

Respiratory protection: Vapor respirator. Follow local and national regulations. Hand protection: Protective gloves. Eye protection: Safety glasses. A face-shield, if the situation requires. Skin and body protection: Protective clothing. Protective boots, if the situation requires.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state (20°C): Liquid Form: Clear Colour: Colorless - Slightly pale yellow Odour: Odorless pH: 9.0 - 10.0 (H<sub>2</sub>O soln. 20°C) Melting point/freezing point: No data available Boiling point/range: 182°C Flash point: No data available

Flammability or explosive

limits:

Lower: 3.1%

Upper: 11.4%  
Vapour pressure: 0.03kPa/25°C  
Vapour density: 3.1  
Relative density: 0.99  
Solubility(ies):  
[Water] Miscible  
[Other solvents] No data available  
Log Pow: -0.92  
Autoignition temperature: 402°C

## 10. STABILITY AND REACTIVITY

Chemical stability: Stable under proper conditions.  
Possibility of hazardous reactions: No special reactivity has been reported.  
Conditions to avoid: Open flame  
Incompatible materials: Oxidizing agents  
Hazardous decomposition products: Carbon monoxide, Carbon dioxide

## 11. TOXICOLOGICAL INFORMATION

Acute Toxicity: orl-mus LD50:5462 mg/kg  
ipr-mus LD50:6075 mg/kg  
Skin corrosion/irritation: No data available  
Serious eye damage/irritation: No data available  
Germ cell mutagenicity: No data available  
Carcinogenicity:  
IARC = No data available  
NTP = No data available  
Reproductive toxicity: No data available  
RTECS Number: EK0532000

## 12. ECOLOGICAL INFORMATION

Ecotoxicity:  
Fish: No data available  
Crustacea: No data available  
Algae: No data available  
Persistence / degradability: No data available  
Bioaccumulative potential(BCF): 3.2  
Mobility in soil  
Log Pow: -0.92  
Soil adsorption (Koc): 7.5  
Henry's Law constant(PaM<sup>3</sup>/mol):  $2.9 \times 10^{-3}$

## 13. DISPOSAL CONSIDERATIONS

Recycle to process, if possible. Consult your local regional authorities. You may be able to burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

## 14. TRANSPORT INFORMATION

Hazards Class: Does not correspond to the classification standard of the United Nations UN-No: Not listed

## 15. REGULATORY INFORMATION

Regulations on the Control over Safety of Dangerous Chemicals (State Council announces on January 26, 2002 and revised on February 16, 2011): Safe use and production, the storage of a dangerous chemical, transport, loading and unloading were prescribed.

## 16. OTHER INFORMATION

This SDS was prepared sincerely on the basis of the information we could obtained, however, any warranty shall not be given regarding the data contained and the assessment of hazards and toxicity. Prior to use, please investigate not only the hazards and toxicity information but also the laws and regulations of the organization, area and country where the products are to be used, which shall be given the first priority. The products are supposed to be used promptly after purchase in consideration of safety. Some new information or amendments may be added afterwards. If the products are to be used far behind the expected time of use or you have any questions, please feel free to contact us. The stated cautions are for normal handling only. In case of special handling, sufficient care should be taken, in addition to the safety measures suitable for the situation. All chemical products should be treated with the recognition of "having unknown hazards and toxicity", which differ greatly depending on the conditions and handling when in use and/or the conditions and duration of storage. The products must be handled only by those who are familiar with specialized knowledge and have experience or under the guidance of those specialists throughout use from opening to storage and disposal. Safe usage conditions shall be set up on each user's own responsibility.