

## Chemical Safety Data Sheet MSDS / SDS

**1,1'-Bis[3-(trimethylammonio)propyl]-4,4'-bipyridinium Tetrachloride Dihydrate**

Revision Date:2026-05-31 Revision Number:1

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name : 1,1'-Bis[3-(trimethylammonio)propyl]-4,4'-bipyridinium Tetrachloride Dihydrate  
CBnumber : CB13962858  
CAS : 108228-37-1  
Synonyms : BTMAP-Vi, 1,1'-Bis[3-(trimethylammonio)propyl]-4,4'-bipyridinium Tetrachloride Dihydrate

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

**Company Identification**

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 010-86108875

**SECTION 2: Hazards identification****GHS Label elements, including precautionary statements**

Symbol(GHS)



Signal word

Warning

**Precautionary statements**

P264 Wash skin thoroughly after handling.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P302+P352 IF ON SKIN: wash with plenty of soap and water.  
P321 Specific treatment (see ... on this label).  
P332+P313 IF SKIN irritation occurs: Get medical advice/attention.  
P362 Take off contaminated clothing and wash before reuse.  
P264 Wash skin thoroughly after handling.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
Continuerinsing.

## Hazard statements

H315 Causes skin irritation

H319 Causes serious eye irritation

---

## SECTION 3: Composition/information on ingredients

### Substance

Product name	: 1,1'-Bis[3-(trimethylammonio)propyl]-4,4'-bipyridinium Tetrachloride Dihydrate
Synonyms	: BTMAP-Vi, 1,1'-Bis[3-(trimethylammonio)propyl]-4,4'-bipyridinium Tetrachloride Dihydrate
CAS	: 108228-37-1
MF	: C22H42Cl4N4O2
MW	: 536.406

---

## SECTION 4: First aid measures

### If inhaled

Remove person to fresh air and keep comfortable for breathing. Get medical advice/ attention if you feel unwell.

### In case of skin contact

Take off all contaminated clothing immediately. Wash off with plenty of water. If skin irritation occurs: Get medical advice/ attention.

### In case of eye contact

Rinse with plenty of water. If easy to do, remove contact lens, if worn. If eye irritation persists: Get medical advice/ attention.

### If swallowed

Get medical advice/ attention. Rinse mouth.

### Most important symptoms and effects, both acute and delayed

None known.

---

## SECTION 5: Firefighting measures

### Suitable extinguishing media

Dry powder, Foam, Water spray, Carbon dioxide (CO2)

### Specific hazards during fire fighting

No information available.

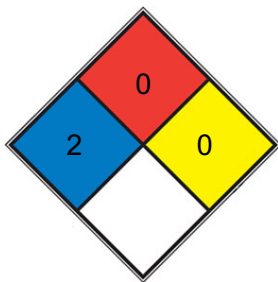
### Specific extinguishing methods

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Immediately evacuate personnel to safe areas. Remove undamaged containers from fire area if it is safe to do so.

## Special protective equipment for fire-fighters

Use personal protective equipment.

### NFPA 704



<input checked="" type="checkbox"/>	HEALTH	2	Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury (e.g. <a href="#">diethyl ether</a> , ammonium phosphate, iodine)
<input checked="" type="checkbox"/>	FIRE	0	Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)
<input checked="" type="checkbox"/>	REACT	0	Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium, <a href="#">N2</a> )
<input type="checkbox"/>	SPEC.		
<input type="checkbox"/>	HAZ.		

---

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Wear suitable protective equipment. Keep people away from and upwind of spill/leak. Entry to non-involved personnel should be controlled around the leakage area by roping off, etc.

### Environmental precautions

Prevent product from entering drains.

### Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust.

---

## SECTION 7: Handling and storage

### Handling

#### Technical measures

Prevent dispersion of dust.

#### Local/Total ventilation

Ensure adequate ventilation. Use a local exhaust ventilation.

#### Advice on safe handling

Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Wash hands and face thoroughly after handling.

**Avoidance of contact**

Oxidizing agents

**Storage****Conditions for safe storage**

Keep container tightly closed. Store in a cool and shaded area. Protect from moisture. Keep under inert gas.

---

## SECTION 8: Exposure controls/personal protection

**Ingredients with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Engineering measures**

Install a closed system or local exhaust.

Also install safety shower and eye bath.

**Personal protective equipment****Respiratory protection**

Dust mask

**Eye/face protection**

Safety glasses

Face-shield

**Skin and body protection**

Protective suit

**Hand protection**

Protective gloves \*Use personal protective equipment(PPE) approved under appropriate government standards and follow local and national regulations.

---

## SECTION 9: Physical and chemical properties

**Information on basic physicochemical properties**

solid

---

**Color**

white

**Odor**

No data available

**Odor Threshold**

No data available

**pH**

No data available

**Melting point/freezing point**

No data available

**Boiling point/boiling range**

No data available

**Flash point**

No data available

**Evaporation rate**

No data available

**Flammability**

No data available

**Upper explosion limit / Upper flammability limit**

No data available

**Lower explosion limit / Lower flammability limit**

No data available

**Vapor pressure**

No data available

**Solubility(ies)**

**Water solubility**

No data available

**Solubility in other solvents**

No data available

**Partition coefficient: n-octanol/water**

No data available

**Autoignition temperature**

No data available

**Decomposition temperature**

No data available

**Viscosity**

**Viscosity, dynamic**

No data available

**Viscosity, kinematic**

No data available

**Molecular weight**

536.40 g/mol

**Physical state**

powder to crystal

---

**SECTION 10: Stability and reactivity****Reactivity**

No data available

**Chemical stability**

Stable under normal conditions.

**Possibility of hazardous reactions**

None under normal processing.

**Conditions to avoid**

Exposure to moisture.

**Incompatible materials**

Oxidizing agents

**Hazardous decomposition products**

Carbon monoxide, Carbon dioxide (CO<sub>2</sub>), Nitrogen oxides (NO<sub>x</sub>), Hydrogen chloride gas

---

**SECTION 11: Toxicological information****Acute toxicity**

Classified based on available data. For more details, see section 2.

**Skin corrosion/irritation****Product****Result**

Skin irritation

**Components**

**1,1'-Bis[3-(trimethylammonio)propyl]-4,4'-bipyridinium Tetrachloride Dihydrate**

**Result**

Skin irritation

**Serious eye damage/eye irritation****Product****Result**

Eye irritation

**Components****1,1'-Bis[3-(trimethylammonio)propyl]-4,4'-bipyridinium Tetrachloride Dihydrate****Result**

Eye irritation

**Respiratory or skin sensitization**

Classified based on available data. For more details, see section 2.

**Germ cell mutagenicity**

Classified based on available data. For more details, see section 2.

**Carcinogenicity**

Classified based on available data. For more details, see section 2.

**Reproductive toxicity**

Classified based on available data. For more details, see section 2.

**STOT-single exposure**

Classified based on available data. For more details, see section 2.

**STOT-repeated exposure**

Classified based on available data. For more details, see section 2.

**Repeated dose toxicity**

Classified based on available data. For more details, see section 2.

**Aspiration toxicity**

Classified based on available data. For more details, see section 2.

---

**SECTION 12: Ecological information****Ecotoxicity**

No data available

### **Persistence and degradability**

No data available

### **Bioaccumulative potential**

No data available

### **Mobility in soil**

No data available

### **Other adverse effects**

No data available

---

## SECTION 13: Disposal considerations

### **Disposal methods**

#### **Waste from residues**

Disposal in accordance with local and national regulations. Entrust disposal to a licensed waste disposal company.

#### **Contaminated packaging**

Disposal in accordance with local and national regulations. Before disposal of used container, remove contents completely.

---

## SECTION 14: Transport information

### **International Regulations**

#### **IATA-DGR**

##### **UN/ID No.**

Not applicable

##### **Proper shipping name**

Not applicable

##### **Class**

Not applicable

##### **Subsidiary risk**

Not applicable

##### **Packing group**

Not applicable

#### **IMDG-Code**

##### **UN number**

Not applicable

##### **Proper shipping name**

Not applicable

**Class**

Not applicable

**Subsidiary risk**

Not applicable

**Packing group**

Not applicable

**EmS Code**

Not applicable

**Domestic regulation****GB 6944/12268****UN number**

Not applicable

**Proper shipping name**

Not applicable

**Class**

Not applicable

**Subsidiary risk**

Not applicable

**Packing group**

Not applicable

---

## SECTION 15: Regulatory information

**Measures on the Environmental Administration of New Chemical Substances Registration****Registration/Notification number**

B1A412215651

Downstream users need to comply with the conditions of safe use of the chemical, understand the environmental and health hazard and risk management measures identified on the SDS as well as the local/national regulations concerning the chemical.

**The ingredients of this product are reported in the following inventories****CH BAGREG**

Not in compliance with the inventory

**TSCA**

Substance(s) not listed on TSCA inventory

**AICS**

Not in compliance with the inventory

**DSL**

This product contains the following components that are not on the Canadian DSL nor NDSL.

1,1'-Bis[3-(trimethylammonio)propyl]-4,4'-bipyridinium Tetrachloride

Dihydrate

**ENCS**

Not in compliance with the inventory

**ISHL**

Not in compliance with the inventory

**KECI**

Not in compliance with the inventory

**PICCS**

Not in compliance with the inventory

**IECSC**

Not in compliance with the inventory

**NZIoC**

Not in compliance with the inventory

---

## SECTION 16: Other information

**Abbreviations and acronyms**

CAS: Chemical Abstracts Service

TWA: Time-Weighted Average

STEL: Short-Term Exposure Limit

LD50: Lethal Dose 50%

LC50: Lethal Concentration 50%

EC50: Effective Concentration 50%

PEL: Permissible Exposure Limit

TLV: Threshold Limit Value

IMDG: International Maritime Dangerous Goods Code

IATA: International Air Transport Association

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

DOT: US Department of Transportation

NFPA: National Fire Protection Association

NIOSH: National Institute for Occupational Safety and Health

OSHA: Occupational Safety and Health Administration

**Disclaimer:**

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.