

# Material Safety Data Sheet(MSDS)

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## I. Product and Company Identification

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**Product Name:** Tiotropium Bromide  
**Catalog Number:** BCC2000  
**CAS Number:** 136310-93-5  
**Company:** Sichuan BioCrick Biotech Co., Ltd.  
**Address:** No.88, South Keyuan Road, Hi-Tech Zone, Chengdu, Sichuan 610041, PRC  
**Tel:** +86-28-8543-3893  
**Fax:** +86-28-8543-3893  
**Email:** service@biocrick.com

## II. Composition/data on components:

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**Purity:** >98%  
**Formula:** C<sub>19</sub>H<sub>22</sub>BrNO<sub>4</sub>S<sub>2</sub>  
**Molecular Weight:** 472.42

## III. Hazards identification:

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### Emergency Overview

**OSHA Hazards:** No Specific Hazard

## IV. First aid measures:

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### After Inhalation:

If inhaled, remove to fresh air; if breathing is difficult, give oxygen; if breathing stops, give artificial respiration.

### After skin contact:

Flush with copious amounts of water; remove contaminated clothing and shoes; call a physician; Take victim to hospital immediately; call a physician.

### After eye contact:

Check for and remove contact lenses and flush with copious amounts of water; assure adequate flushing by separating the eyelids with fingers; call a physician.

### After swallowing:

If swallowed, do NOT induce vomiting. Wash out mouth with copious amounts of water; call a physician.

## V. Fire fighting measures:

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### Conditions of flammability:

Not flammable or combustible.

### Suitable extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### Special protective equipment for firefighters:

Wear self-contained breathing apparatus for fire fighting if necessary.

### Hazardous combustion products:

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Hazardous decomposition products formed under fire conditions. Carbon oxides, nitrogen oxides (NO<sub>x</sub>), Sulphur oxides.

## **VI. Accidental release measures:**

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### **Personal precautions:**

Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas.

### **Environmental precautions:**

Do not let product enter drains. Prevent further leakage or spillage if safe to do so.

### **Methods and materials for containment and cleaning up:**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

## **VII. Handling and storage:**

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### **Precautions for safe handling:**

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Keep away from sources of ignition. Avoid prolonged or repeated exposure.

### **Conditions for safe storage:**

Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature: Store at 2~8°C Keep in a dry place.

## **VII. Handling and storage:**

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Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Keep away from sources of ignition. Avoid prolonged or repeated exposure.

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## **VIII. Exposure controls and personal protection:**

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### **Personal protective equipment as follows:**

Contains no substances with occupational exposure limit values.

### **Respiratory protection:**

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

### **Hand protection:**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

### **Eye protection:**

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

### **Skin and body protection:**

Choose body protection in relation to its type, to the concentration and amount of dangerous substances,

and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures:**

General industrial hygiene practice.

**IX. PHYSICAL AND CHEMICAL PROPERTIES:**

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a) Appearance

Powder

b) Odour

no data available

c) Odour Threshold

no data available

d) pH

no data available

e) Melting point/freezing point

no data available

f) Initial boiling point and boiling range

no data available

g) Flash point

no data available

h) Evaporation rate

no data available

i) Flammability (solid, gas)

no data available

j) Flammability or explosive limits

no data available

l) Vapour density

no data available

m) Relative density

no data available

n) Water solubility

no data available

o) Partition coefficient:

no data available

p) Autoignition temperature

no data available

q) Decomposition temperature

no data available

r) Viscosity

no data available

s) Explosive properties

no data available

t) Oxidizing properties

no data available

**X. Stability and reactivity:**

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**Chemical stability:**

Stable under recommended storage conditions.

**Possibility of hazardous reactions:**

No data available.

**Conditions to avoid:**

No data available.

**Materials to avoid:**

Strong oxidising/reducing agents, strong acids/alkalis.

**XI. Toxicological information:**

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**Acute Toxicity:**

No data available

**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

**XII. Ecological information:**

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**Toxicity:**

No data available

**Persistence and degradability:**

No data available

**Bioaccumulative potential:**

No data available

**Mobility in soil:**

No data available

**Results of PBT and vPvB assessment:**

No data available

**Other adverse effects:**

May be harmful to the aquatic environment.

**XIII. Disposal consideration:**

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**General notes:**

Dispose of in accordance with prevailing country, federal, state and local regulations

**XIV. Transport information:**

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**DOT (US):**

This substance is considered to be non-hazardous for transport.

**ADR/RID:**

Not dangerous goods

**IMDG:**

Not dangerous goods

**IATA:**

Not dangerous goods

**Transport hazard class(es):**

Does not meet the criteria for classification as hazardous for transport.

**XV. Regulations:**

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**Safety, health and environmental regulations/legislation specific for the substance or mixture:**

no data available

**Chemical Safety Assessment:**

no data available

**XVI. Additional information:**

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This MSDS above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

**End of safety data sheet**