1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

<table>
<thead>
<tr>
<th>Product Name: Ipratropium bromide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog Number: 0692</td>
</tr>
<tr>
<td>CAS Number: 22254-24-6</td>
</tr>
<tr>
<td>EC Number: 244-873-8</td>
</tr>
<tr>
<td>IUPAC Name: (endo, syn)-(±)-3-(3-Hydroxy-1-oxo-2-phenylpropoxy)-8-methyl-8-(1-methylethyl)-8-azoniabicyclo[3.2.1]octane bromide</td>
</tr>
</tbody>
</table>

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

Identified Uses: Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

<table>
<thead>
<tr>
<th>Company: Tocris Bioscience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone: + 44 (0)117 916-3333</td>
</tr>
<tr>
<td>The Watkins Building, Atlantic Road, Bristol, BS11 9QD, UK</td>
</tr>
<tr>
<td>Fax: + 44 (0)117 916-3344</td>
</tr>
<tr>
<td>Internet: <a href="http://www.tocris.com">www.tocris.com</a></td>
</tr>
<tr>
<td>E-mail address: <a href="mailto:info@bio-techne.com">info@bio-techne.com</a></td>
</tr>
</tbody>
</table>

1.4 Emergency Telephone number

Emergency Tel: + 44 (0)117 916-3333 (09.00 - 17.00 GMT)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [GHS/CLP]

Acute Toxicity, oral - Category 4

2.2 Label elements

Labeling according to Regulation (EC) No 1272/2008 [CLP]

Pictogram(s):

| ! | Warning |

Signal word: Warning

Hazard statement(s):

H302 Harmful if swallowed

Precautionary statement(s):

P264 Wash hands thoroughly after handling

P301+312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<table>
<thead>
<tr>
<th>Product Name: Ipratropium bromide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula: C20H30BrNO3</td>
</tr>
<tr>
<td>Molecular Weight: 412.37</td>
</tr>
<tr>
<td>CAS Number: 22254-24-6</td>
</tr>
<tr>
<td>EC Number: 244-873-8</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a doctor and show this safety data sheet.

If inhaled

Remove to fresh air and monitor breathing. If breathing becomes difficult, give oxygen. If breathing stops, give artificial respiration. Consult a doctor.

In case of skin contact

Immediately wash skin with copious amounts of soap and water for at least 15 minutes. Remove contaminated clothing and shoes and wash before reuse. Consult a doctor.

In case of eye contact

Flush with copious amounts of water for at least 15 minutes. Consult a doctor.

If swallowed


4.2 Most important symptoms and effects, both acute and delayed
To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

4.3 Indication of immediate medical attention and special treatment needed
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
In combustion, may emit toxic fumes.

5.3 Precautions for fire-fighters
Wear suitable protective clothing to prevent contact with skin and eyes and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Do not take action without suitable protective clothing - see section 8 of SDS. Evacuate personnel to safe areas. Ensure adequate ventilation. Avoid breathing vapors, mist, dust or gas.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover spillage with suitable absorbent material. Sweep up material and place in an appropriate container. Hold all material for appropriate disposal as described under section 13 of SDS.

6.4 Reference to other sections
For required PPE see section 8. For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Use in a chemical fume hood, with air supplied by an independent system. Avoid inhalation, contact with eyes, skin and clothing. Avoid the formation of dust and aerosols. Use in a well-ventilated area. Keep away from sources of ignition. Avoid prolonged or repeated exposure.

7.2 Conditions for safe storage, including any incompatibilities.
Store in cool, well-ventilated area. Keep away from direct sunlight. Keep container tightly sealed until ready for use. Recommended storage temperature: Store at +4°C

7.3 Specific end uses
Use in a laboratory fume hood where possible. Refer to employer's COSHH risk assessment.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls
Appropriate engineering controls
Use in a fume hood where applicable. Ensure all engineering measures described under section 7 of SDS are in place. Ensure laboratory is equipped with a safety shower and eye wash station.

Personal protective equipment
Eye/face protection
Use appropriate safety glasses.

Skin protection
Use appropriate chemical resistant gloves (minimum requirement use standard BS EN 374:2003). Gloves should be inspected before use. Wash and dry hands thoroughly after handling.

Body protection
Wear appropriate protective clothing.

Respiratory protection
If risk assessment indicates necessary, use a suitable respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES
9.1 Information on basic physical and chemical properties

- **Appearance**: White solid
- **Odor**: No data available
- **Odor threshold**: No data available
- **pH**: No data available
- **Melting / freezing point**: No data available
- **Boiling point / range**: No data available
- **Flash point**: No data available
- **Evaporation rate**: No data available
- **Flammability (solid, gas)**: No data available
- **Upper / lower flammability or explosive limits**: No data available
- **Vapor pressure**: No data available
- **Vapor density**: No data available
- **Relative density**: No data available
- **Solubility(ies)**: Soluble to 50 mM in water
- **Partition coefficient**: No data available
- **Auto-ignition temperature**: No data available
- **Decomposition temperature**: No data available
- **Viscosity**: No data available
- **Explosive properties**: No data available
- **Oxidising properties**: No data available
- **pH**: No data available
- **Solubility**: Soluble to 50 mM in water

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended transport or storage conditions.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.

10.4 Conditions to avoid

Heat, moisture.

10.5 Incompatible materials

Strong acids/alkalis, strong oxidising/reducing agents.

10.6 Hazardous decomposition products

- In combustion may emit toxic fumes. No known decomposition information.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

- **Acute Toxicity**
  - ORL-RAT LD50: 1663mg/kg; IHL-MAN TCL0: 1µg/kg; IPR-RAT LD50: 113mg/kg; SCU-RAT LD50: 635mg/kg; ORL-MUS LD50: 1001mg/kg; IPR-MUS LD50: 72mg/kg; ORL-DOG LD50: 1300mg/kg; IVN-DOG LDLo: 20mg/kg; ORL-RBT LD50: 1557mg/kg; EYE-RBT: 100mg/24H

- **Skin corrosion/irritation**
  - Classified based on available data

- **Serious eye damage/irritation**
  - Classified based on available data

- **Respiratory or skin sensitization**
  - Classified based on available data

- **Germ cell mutagenicity**
  - Classified based on available data

- **Carcinogenicity**
  - Classified based on available data

- **Reproductive toxicity**
  - Classified based on available data

- **Specific target organ toxicity - single exposure**
  - Classified based on available data

- **Specific target organ toxicity - repeated exposure**
  - Classified based on available data

- **Aspiration hazard**
  - Classified based on available data

- **Symptoms / Routes of exposure**
  
  **Inhalation**: There may be shortness of breath with a burning sensation in the throat. Exposure may cause coughing or wheezing. Absorption through the lungs can occur causing symptoms similar to those of ingestion. There may be shortness of breath.

  **Ingestion**: There may be soreness and redness of the mouth and throat. Nausea and stomach pain may occur. Blood may be vomited. There may be vomiting and diarrhea.

  **Skin**: No data available
Irritation or pain may occur at the site of contact. There may be redness or whiteness of the skin in the area of exposure. Absorption through the skin may be harmful.

Eyes: There may be pain and redness. The vision may become blurred. The eyes may water profusely. Absorption through the eye may cause effects similar to skin contact and/or ingestion.

Delayed / Immediate Effects: Immediate effects can be expected after short-term exposure.

Additional Information
RTECS No: YM3700000
Exposure may cause irritation of eyes, mucous membranes, upper respiratory tract and skin.

To the best of our knowledge, the chemical, physical and toxicological properties have not been fully investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
No data available

12.6 Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Product
Transfer to a suitable container and arrange for collection by specialized disposal company in accordance with National legislation.

Contaminated packaging
Dispose of in a regulated landfill site or other method for hazardous or toxic wastes in accordance with National legislation.

14. TRANSPORT INFORMATION

Classified according to the criteria of the UN Model Regulations as reflected in the IMDG Code, ADR, RID and IATA.

14.1 UN-Number
Does not meet the criteria for classification as hazardous for transport.

14.2 UN proper shipping name
Does not meet the criteria for classification as hazardous for transport.

14.3 Transport hazard class(es)
Does not meet the criteria for classification as hazardous for transport.

14.4 Packaging group
Does not meet the criteria for classification as hazardous for transport.

14.5 Environmental hazards
This product is not classified as environmentally hazardous according to the UN Model Regulations, nor a marine pollutant according to the IMDG Code.

14.6 Special precautions for users
No data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 453/2010.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available
California Proposition 65
Not applicable

15.2 Chemical safety assessment
A Chemical Safety Assessment has not been made for this product.

16. OTHER INFORMATION