

SAFETY DATA SHEET

Methacholine Chloride USP

Company Information

Manufacturer	Methapharm Inc. 81 Sinclair Boulevard Brantford, Ontario N3S 7X6, Canada Tel: (+1) 519.751.3602 Fax: (+1) 519.751.9149 sales@methapharm.com www.methapharm.com
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1. Identity Information

Product Identifier:	Methacholine Chloride USP
Synonyms:	Provocholine®, Amechol, Mecholyl, Mecholyl Chloride
CAS Number:	62-51-1
Chemical Name:	2-(Acetyloxy)-N,N,N-trimethyl-1-propanaminium chloride
Therapeutic Category:	Cholinergic
Formula:	C ₈ H ₁₈ ClNO ₂
RTECS Number:	BR5250000

2. Hazard(s) Identification

Physical Hazards:	Not classified.	
Health Hazards:	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
OSHA Hazard (s):	Not classified.	
Signal Word:	Warning.	
Hazard Statement:	Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation.	

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Precautionary statement:	
Prevention:	Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Wear protective gloves. Wear eye/face protection.
Response:	If swallowed: call a poison center/doctor if you feel unwell. Rinse mouth. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash 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. If eye irritation persists: get medical advice/attention.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal:	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Not classified

3. Composition/Information on Ingredients

Substance			
Hazardous components			
Chemical name	Common Name and Synonyms	CAS Number	%
Methacholine Chloride	Acetyl-B-methylcholine chloride	62-51-1	100

4. First Aid Measures

Inhalation:	Move to fresh air. If breathing becomes difficult CALL A PHYSICIAN. If patient is asthmatic, administer appropriate medication (e.g. salbutamol).
Skin Contact:	Remove contaminated clothing. Wash off with soap and plenty of water. If skin irritation 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. Get medical attention if irritation develops and persists.
Ingestion:	IF SWALLOWED: wash out mouth with water, provided the person is conscious. CALL A PHYSICIAN.
Most important symptoms/effects, acute and delayed:	Irritation of eyes, skin, and mucous membranes. Shortness of breath. Gastrointestinal disturbances. Hypotension.

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Indication of immediate medical attention and special treatment needed:

Treatment of cholinergic agonist overdose should be symptomatic and supportive and may include the following: administer activated charcoal as a slurry unless contraindicated. This is most effective when administered within one hour of ingestion. For muscarinic symptoms, administer atropine sulfate intravenously. For bronchospasm, administer epinephrine. Inhaled beta-agonist bronchodilators may reverse bronchoconstriction. Systemic corticosteroids may be needed. For lung injury, maintain ventilation and oxygenation by employing early use of PEEP and mechanical ventilation if needed. Monitor arterial blood gas frequently. For seizures, administer a benzodiazepine intravenously, followed by phenobarbital or propofol if the seizures recur. Monitor for hypotension, dysrhythmias, respiratory depression, and need for endotracheal intubation. Evaluate for hypoglycemia, electrolyte disturbances, hypoxia. (Poisindex).

General Information:

Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention.

5. Fire-fighting Measures

Suitable extinguishing media:

Water spray, carbon dioxide, dry chemical powder or polymer foam as appropriate for surrounding fire and materials.

Unsuitable extinguishing media:

None known.

Specific hazards arising from the chemical:

No unusual fire or explosion hazards noted.

Special protective equipment and precautions for firefighters:

As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing to prevent contact with skin and eyes.

Fire-fighting equipment/instructions:

Use water spray to cool unopened containers.

Specific methods:

This material is assumed to be combustible. As with all dry powders, it is advisable to ground mechanical equipment in contact with dry material to dissipate the potential buildup of static electricity. When heated to decomposition, material emits toxic fumes under fire conditions.

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6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Avoid inhalation of dust from the spilled material. Wear appropriate personal protective equipment.

Methods and materials for containment and cleaning up:

Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid the generation of dusts during clean-up. For waste disposal, see section 13 of the SDS. Clean surface thoroughly to remove residual contamination.

7. Handling and Storage

Precautions for safe handling:

Wear approved respirator and chemically compatible gloves. Vacuum or sweep up spillage. Avoid dust. Place spillage in appropriate container for waste disposal. Wash contaminated clothing before reuse. Ventilate area and wash spill site.

Conditions for safe storage, including any incompatibilities:

Store in tightly closed container in a cool dry place (HYGROSCOPIC). This material should be handled and stored per label and other instructions to ensure product integrity. Do not permit eating, drinking or smoking near material. Wash thoroughly after handling. Avoid contact with eyes, skin or clothing. Avoid breathing dust or mist. Use with adequate dust control.

8. Exposure Controls/Personal Protection

Biological limit values:

No biological exposure limits noted for the ingredient(s)

Exposure guidelines:

No exposure standards allocated.

Appropriate engineering controls:

Airborne exposure should be controlled primarily by engineering controls such as general dilution ventilation, local exhaust ventilation, or process enclosure. Local exhaust ventilation is generally preferred to general exhaust because it can control the contaminant at its source, preventing dispersion into the work area. An industrial hygiene survey involving air monitoring may be used to determine the effectiveness of engineering controls. Effectiveness of engineering controls intended for use with highly potent materials should be assessed by use of nontoxic surrogate materials. Local exhaust ventilation such as a laboratory fume hood or other vented enclosure is recommended, particularly for grinding, crushing, weighing or other dust-generating procedures.

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Individual protection measures, such as personal protective equipment

Eye/face protection:	Safety glasses with sideshields are recommended. Face shields or goggles may be required if splash potential exists or if corrosive materials are present. Approved eye protection (e.g., bearing the ANSI Z87 or CSA stamp) is preferred. Maintain eyewash facilities in the work area.
Skin protection:	
Hand protection:	Chemically compatible gloves. For handling solutions, ensure that the glove material is protective against the solvent being used. Use handling practices that minimize direct hand contact. Employees who are sensitive to natural rubber (latex) should use nitrile or other synthetic non-latex gloves. Use of powdered latex gloves should be avoided due to the risk of latex allergy.
Other:	For handling of laboratory scale quantities, a cloth lab coat is recommended. Where significant quantities are handled, work clothing may be necessary to prevent take-home contamination.
Respiratory protection:	Where respirators are deemed necessary to reduce or control occupational exposures, use NIOSH-approved respiratory protection and have an effective respirator program in place (applicable U.S. regulation OSHA 29 CFR 1910.134).
Thermal hazards:	Not available.
General Hygiene considerations:	Handle in accordance with good industrial hygiene and safety practice.

9. Physical/Chemical Characteristics

Appearance:	White crystalline powder.
Physical state:	Solid.
Form:	Powder.
Odor:	Fishy odor.
Odor threshold:	Not available.
pH:	Neutral to litmus.
Melting point/freezing point:	338 – 343.4 °F (170 – 173 °C)
Initial boiling point and boiling range:	Not available.
Flash point:	Not available.
Evaporation rate:	Not available.
Flammability (solid, gas):	Not applicable.

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Upper/lower flammability or explosive limits:	
Flammability limit – lower (%):	Not available.
Flammability limit – upper (%):	Not available.
Explosive limit – lower (%):	Not available.
Explosive limit – upper (%):	Not available.
Vapour pressure:	0.0000001 kPa at 25 °C
Vapour density:	Not available.
Relative density:	Not available.
Solubility in water:	Very soluble.
Partition coefficient (n-octanol/water):	Not available.
Auto-ignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	Not available.
Other information:	
Chemical family:	Quaternary ammonium compound.
Molecular formula:	C ₈ H ₁₈ NO ₂ .Cl
Molecular weight:	195.69
Solubility (other):	Freely soluble in ethanol and in chloroform; insoluble in ether.

10. Stability and Reactivity

Reactivity:	No reactivity hazards known.
Chemical stability:	Stable at normal conditions.
Possibility of hazardous reactions:	No dangerous reaction known under conditions of normal use.
Conditions to avoid:	None known.
Incompatible materials:	Strong oxidizing agents.
Hazardous decomposition products:	NO _x , Cl ⁻ . Irritating and/or toxic fumes or gases. Emits toxic fumes under fire conditions.

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11. Toxicological Information

Information on likely routes of exposure:

Ingestion: Harmful if swallowed.
Inhalation: May cause irritation and/or bronchoconstriction to the respiratory system.
Skin contact: Causes skin irritation.
Eye contact: Causes serious eye irritation.

Symptoms related to the physical, chemical, and toxicological characteristics:

Irritant effects. Nausea. Vomiting. Diarrhea. Abdominal pain. Belching. Pinpoint pupils. Flushing. Fast heartbeat. Slow heartbeat. Cough. Difficulty breathing. Inability to control urination. Sweating. Tearing. Muscle spasms. Muscle weakness. Paralysis. Itching. Dizziness. Headache. Tremor. Seizures. Loss of consciousness.

Delayed and immediate effects of exposure:

Bronchoconstriction. Cardiac arrest. Hypotension.

Cross sensitivity:

Persons sensitive to other parasympathomimetic agents may be sensitive to this material also.

Medical conditions aggravated by exposure:

Asthma. Cardiovascular disorders. Peptic ulcer. Epilepsy. Thyroid problems. Urinary tract obstruction. Vagotonia. Lung function impairment. Hypertension.

Acute toxicity:

Harmful if swallowed.

Product

Species

Test Results

Methacholine Chloride (CAS 62-51-1)

Acute

Oral
LD50

Mouse
Rat

740 mg/kg
750 mg/kg

Skin corrosion/irritation:

Causes skin irritation.

Serious eye damage/eye irritation:

Causes serious eye irritation.

Respiratory sensitization:

Due to lack of data the classification is not possible.

Skin sensitization:

Due to lack of data the classification is not possible.

Germ cell mutagenicity:

Due to lack of data the classification is not possible.

Carcinogenicity:

Due to lack of data the classification is not possible. This material is not considered to be a carcinogen by IARC, NTP, or OSHA.

Reproductive toxicity:

Due to lack of data the classification is not possible.

Specific target organ toxicity – single exposure:

Respiratory tract irritation.

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Specific target organ toxicity – repeated exposure: Based on available data, the classification criteria are not met.

Aspiration hazard: Based on available data, the classification criteria are not met.

12. Ecological Information

Ecotoxicity: No ecotoxicity data noted for the ingredient(s).

Persistence and degradability: No data is available on the degradability of this product.

Bioaccumulative potential: Not available.

Mobility in soil: Not available.

Other adverse effects: Not available.

13. Disposal Considerations

Disposal instructions: Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all applicable Federal, Provincial, State and local laws.

Local disposal regulations: Not available.

Hazardous waste code: Not available.

Waste from residues / unused products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging: Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT:
Not regulated as a hazardous material by DOT.

IATA:
Not regulated as a dangerous good.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: No information available.

15. Regulatory Information

US federal regulations: CERCLA/SARA Hazardous Substances – Not applicable.
All components are on the U.S. EPA TSCA Inventory List.

Superfund Amendments and Reauthorization Act of 1986 (SARA):

Hazard categories: Immediate Hazard – Yes
Delayed Hazard – No
Fire Hazard – No
Pressure Hazard – No
Reactivity Hazard - No

SARA 302 Extremely hazardous Substance: No.
SARA 311/312 Hazardous Chemical: No.

Other federal regulations:

Safe Drinking Water Act (SDWA): Not regulated.

Food and Drug Administration (FDA): Not regulated.

US state regulations:

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories:

Country(s) or region:	Inventory name:	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

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16. Other Information, Including Date of Preparation or Last Revision

Issue date:	07-21-2016
Revision date:	07-21-2016
Version #:	NEW
Further information:	Not available.
Disclaimer:	The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide.
Revision Information:	This document has undergone significant changes and should be reviewed in its entirety.