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

1.1 Product Identifier

Chemical Name: Bis(2-chloroethyl)methylamine Hydrochloride

Catalogue #: B418990

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Product Uses: To be used only for scientific research and development. Not for use in humans or animals.

1.3 Details of the Supplier of the Safety Data Sheet

Company: Toronto Research Chemicals
2 Brisbane Road
Toronto, ON M3J 2J8
CANADA

Telephone: +14166659696
FAX: +14166654439
Email: orders@trc-canada.com

1.4 Emergency Telephone Number

Emergency#: +1(416) 665-9696 between 0800-1700 (GMT-5)

2. HAZARDS IDENTIFICATION

WHMIS Classification (Canada) | WHMIS Symbols (Canada)
--- | ---
D1B Toxic Material Causing Immediate and Serious Toxic Effects
Highly Toxic by Ingestion/Skin Absorption

D2A Very Toxic Material Causing Other Toxic Effects
Teratogen
Carcinogen

D2B Toxic Material Causing Other Toxic Effects
Mutagen

E Corrosive Material

2.1/2.2 Classification of the Substance or Mixture and Label Elements

GHS Hazards Classification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

Acute Toxicity, Oral (Category 2)
Acute Toxicity, Dermal (Category 1)
Skin Corrosion (Category 1B)
Serious Eye Damage (Category 1)
Germ Cell Mutagenicity (Category 1B)
Carcinogenicity (Category 1B)
Reproductive Toxicity (Category 1B)

GHS Hazards Identification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

Signal Word: Danger

GHS Hazard Statements
H300  Fatal if swallowed.
H310  Fatal in contact with skin.
H314  Causes severe skin burns and eye damage.
H318  Causes serious eye damage.
H340  May cause genetic defects.
H350  May cause cancer.
H360  May damage fertility or the unborn child.

GHS Precautionary Statements
P201  Obtain special instructions before use.
P264  Wash hands thoroughly after handling.
P280  Wear protective gloves/protective clothing/eye protection/face protection.
P302/P350 IF ON SKIN: Gently wash with plenty of soap and water.
P305/P351/P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310  Immediately call a POISON CENTER or doctor/physician

2.3 Unclassified Hazards/Hazards Not Otherwise Classified
Vesicant.

3. COMPOSITION/INFORMATION ON INGREDIENTS
3.1 Substances
Molecular Formula:  C₇H₁₂Cl₃N  Molecular Weight:  192.51
CAS Registry #:  55-86-7  EC#:  200-246-0
Synonyms
2-Chloro-N-(2-chloroethyl)-N-methylethanamine Hydrochloride; 1,5-Dichloro-3-methyl-3-azapentane Hydrochloride; Chlormethine; 2,2’-Dichloro-N-methyldiethylamine Hydrochloride; Antimit; Azotoyperite; SK 101; Methchlorethamine Hydrochloride; Nitrogen Mustard; Nitrogranulogen;

3.2 Mixtures
Not a mixture.

4. FIRST AID MEASURES
4.1 Description of First Aid Measures
General Advice
If medical attention is required, show this safety data sheet to the doctor.

If Inhaled
If inhaled, move casualty to fresh air. If not breathing, give artificial respiration and consult a physician.

In Case of Skin Contact
Remove contaminated clothing and shoes. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In Case of Eye Contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If Swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting unless advised to do so by a physician or Poison Control Center. Seek medical attention.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed
Cough, Shortness of breath, Headache, Nausea, Vomiting.

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed
No data available.
5. FIREFIGHTING MEASURES

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

5.2 Special Hazards Arising from the Substance or Mixture
Carbon oxides, Nitrogen oxides, Hydrogen chloride

5.3 Advice for Firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further Information
No data available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

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

Method 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.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Keep in a dry place.
Storage conditions: -20˚C Freezer

7.3 Specific End Uses
For scientific research and development only. Not for use in humans or animals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters
Contains no components with established occupational exposure limits.

8.2 Exposure Controls
Appropriate Engineering Controls
A laboratory fume hood or other appropriate form of local exhaust ventilation should be used to avoid exposure.

Personal Protective Equipment
All recommendations below are advisory in nature and a risk assessment should be performed by the employer/end user prior to use of this product. The type of protective equipment must be selected based on the amount and concentration of the dangerous material being used in the workplace.

Eye/Face Protection
Safety goggles or face shield. All equipment should have been tested and approved under appropriate standards, such as NIOSH (US), CSA (Canada), or EN 166 (EU).

Skin Protection
Gloves should be used when handling this material. Gloves are to be inspected prior to use. Contaminated gloves are to be removed using proper glove removal technique so that the outer surface of the glove does not contact bare skin. Dispose of contaminated gloves after use in compliance with good laboratory practices and local requirements.

Gloves used for incidental exposures (splash protection) should be designated as “chemical resistant” by EU standard EN 374 with the resistance codes corresponding to the anticipated use of the material. Unrated gloves are not recommended.
Suggested gloves: AnsellPro Sol-Vex nitrile gloves style 37-175, 15 mil thickness.
Penetration time has not been determined.

Gloves used for prolonged direct exposure (immersion) should be designated “chemical resistant” as per EN 734 with the resistance codes corresponding to the anticipated use of the material.
Penetration time has not been determined.

These recommendations may not apply if the material is mixed with any other chemical, or dissolved into a solution. A risk assessment must be performed to ensure the gloves will still offer acceptable protection.

**Body Protection**
Fire resistant (Nomex) coveralls or chemical-resistant bodysuit (laminated Tychem SL or equivalent).

**Respiratory Protection**
Recommended respirators are NIOSH-approved N100 or CEN-approved FFP3 particulate respirators. These are to be only used as a backup to local exhaust ventilation or other engineering controls. If the respirator is the only means of protection, a full-face supplied air respirator must be used.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on Basic Physical and Chemical Properties**

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<td>White to Off-White Solid</td>
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<td>No data available</td>
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**9.2 Other Information**
no data available

### 10. STABILITY AND REACTIVITY

**10.1 Reactivity**
No data available.

**10.2 Chemical Stability**
Stable under recommended storage conditions.

**10.3 Possibility of Hazardous Reactions**
No data available.

**10.4 Conditions to Avoid**
Avoid moisture.

**10.5 Incompatible Materials**
Avoid moisture.

**10.6 Hazardous Decomposition Products**
In the event of fire: See section 5. Other decomposition products: No data available.
11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

A) Acute Toxicity
   Oral LD50: Rat - 10 mg/kg  
   Dermal LD50: No data available.
   Inhalation LC50: No data available.

B) Skin Corrosion/Irritation
   No data available

C) Serious Eye Damage/Irritation
   Corrosive - causes skin and eye burns. May also cause respiratory tract damage.

D) Respiratory or Skin Sensitization
   No data available

E) Germ Cell Mutagenicity
   Probable human mutagen. Laboratory results have shown mutagenicity in several model systems (including human).

F) Carcinogenicity
   Probable human carcinogen.
   This compound has been designated by the IARC as Group 2A: Probably carcinogenic to humans.

G) Reproductive Toxicity/Teratogenicity
   Possible human reproductive toxin/teratogen.
   Several laboratory studies have shown reproductive toxicity/teratogenicity in animal models.

H) Single Target Organ Toxicity - Single Exposure
   Severe respiratory tract irritation. Material may be extremely destructive to the mucus membranes and the respiratory tract.

I) Single Target Organ Toxicity - Repeated Exposure
   No data available

J) Aspiration Hazard
   No data available

K) Potential Health Effects and Routes of Exposure
   Inhalation
   May be harmful if inhaled. Material is extremely destructive to the mucous membranes and respiratory tract.

   Ingestion
   May be fatal if swallowed.

   Skin
   May be fatal if absorbed through skin. Causes skin burns.

   Eyes
   Causes severe eye burns and possible permanent eye damage.

L) Signs and Symptoms of Exposure
   Cough, Shortness of breath, Headache, Nausea, Vomiting.

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

M) Additional Information
   RTECS: IA210000

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
13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

A) Product
Product may be burned in an incinerator equipped with afterburner and scrubber. Excess and expired materials are to be offered to a licensed hazardous material disposal company. Ensure that all Federal and Local regulations regarding the disposal and destruction of this material are followed.

B) Contaminated Packaging
Dispose of as above.

C) Other Considerations
Product is not to be disposed of in sanitary sewers, storm sewers, or landfills.

14. TRANSPORT INFORMATION

14.1 UN Number
DOT (US): UN2928   IATA: UN2928   IMDG: UN2928   ADR/RID: UN2928

14.2 UN Proper Shipping Name
DOT (US)/IATA: Toxic solids, corrosive, organic, n.o.s. (Chlormethine hydrochloride)
IMDG/ARD/RID: TOXIC SOLID, CORROSIVE, ORGANIC, N.O.S. (Chlormethine hydrochloride)

14.3 Transport Hazard Class(es)

14.4 Packing Group
DOT (US): II   IATA: II   IMDG: II   ADR/RID: II

14.5 Environmental Hazards
DOT (US): None   IATA: None   IMDG: None   ADR/RID: None

14.6 Special Precautions for User
None

15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of WHMIS (Canada), OSHA 1910.1200 (US), and EU Regulation EC No. 1907/2006 (European Union).

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

A) Canada
DSL/NDSL Status: This product or a component of this product is registered on the Canadian DSL/NDSL.

B) United States
TSCA Status: This product is not listed on the US EPA TSCA.

C) European Union
ECHA Status: This product is not registered with the EU ECHA.

15.2 Chemical Safety Assessment
No data available

16. OTHER INFORMATION

16.1 Revision History
Original Publication Date: 5/20/2014

16.2 List of Abbreviations

LD50 Median lethal dose of a substance required to kill 50% of a test population.
LC50 Medial lethal concentration of a substance required to kill 50% of a test population.
LDLo Lowest known lethal dose
TDLo Lowest known toxic dose
IARC International Agency for Research on Cancer
NTP National Toxicology Program
RTECS Registry of Toxic Effects of Chemical Substances

16.3 Further Information
Copyright 2015. Toronto Research Chemicals Inc. Copies may be made for internal use only. The above information is believed to be correct to the best of our knowledge, but is to be only used as a guide. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Please take all due care when handling this product.