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@lgcgroup.com

1.4 Emergency Telephone Number

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

2. HAZARDS IDENTIFICATION

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)
Eye Damage/Irritation (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.
2.3 Unclassified Hazards/Hazards Not Otherwise Classified

Vesicant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Molecular Formula: C H Cl N  
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 immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.

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.

Self-protection of the first aider
Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

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. Use personal protection equipment.

5.4 Further Information

No data available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

This Safety Data Sheet contains 16 sections. All 16 sections must be present for this document to be valid.
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Avoid contact with skin, eyes or clothing.

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

7.1 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.

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

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

This Safety Data Sheet contains 16 sections. All 16 sections must be present for this document to be valid.
9.1 Information on Basic Physical and Chemical Properties

A) Appearance
White to Off-White Solid

B) Odour
No data available

C) Odour Threshold
No data available

D) pH
No data available

E) Melting Point/Freezing Point
103-105˚C

F) Initial Boiling Point/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) Upper/Lower Flammability/Explosive Limits
No data available

K) Vapour Pressure
No data available

L) Vapour Density
No data available

M) Relative Density
No data available

N) Solubility
Methanol (Slightly, Heated), Water (Slightly, Heated)

O) Partition Coefficient: n-octanol/water
No data available

P) Auto-Ignition Temperature
No data available

Q) Decomposition Temperature
No data available

R) Viscosity
No data available

S) Explosive Properties
No data available

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
Strong oxidizing agents.

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 
Inhalation LC50: No data available.

Dermal LD50: 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

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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: IA2100000

12. ECOLOGICAL INFORMATION
12.1 Toxicity
No data available.

12.2 Persistance 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
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
This Safety Data Sheet contains 16 sections. All 16 sections must be present for this document to be valid.
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.