

# MATERIAL SAFETY DATA SHEET

MSDS DATE: 19/12/07

FILE NO.: ALX-400-049

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## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

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**PRODUCT NAME:** Chlorambucil  
**SYNONYMS:** 4-[Bis(2-chloroethyl)amino]benzenebutanoic acid  
**PRODUCT CODES:** ALX-400-049

**MANUFACTURER:** ALEXIS Corporation  
**ADDRESS:** Industriestrasse 17  
CH-4415 Lausen  
Switzerland

**TELEPHONE:** +41 61 926 8989  
**FAX PHONE:** +41 61 926 8979  
**WEBSITE:** www.axxora.com

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## SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

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<u>Formula:</u>	<u>CAS #</u>	<u>EC #</u>	<u>Annex I Index #</u>
C <sub>14</sub> H <sub>19</sub> Cl <sub>2</sub> NO <sub>2</sub>	305-03-3	206-162-0	N/A

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## SECTION 3: HAZARDS IDENTIFICATION

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**ACUTE HEALTH EFFECTS:** TOXIC by inhalation, ingestion, or skin absorption. MAY BE CARCINOGENIC.

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## SECTION 4: FIRST AID MEASURES

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**EYES:** Rinse immediately with plenty of water for 15 minutes. Check for and remove any contact lenses. Seek medical attention if symptoms appear.

**SKIN:** Wash immediately with water for 15 minutes. Remove contaminated clothing. Seek medical attention if symptoms appear.

**INGESTION:** Rinse mouth with water. Do not induce vomiting. Seek medical attention if symptoms appear. Provide MSDS and label information if possible.

**INHALATION:** Take into fresh air. If breathing is difficult, administer oxygen. Get medical attention.

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## SECTION 5: FIRE FIGHTING MEASURES

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**EXTINGUISHING MEDIA:** Water spray, water foam, polymer foam, carbon dioxide, dry chemicals.

**SPECIAL FIRE FIGHTING PROCEDURES:** In case of fire, watch out for the formation of toxic smoke and gases. Wear self-contained respiration equipment. Prevent contact with skin and eyes.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** May be combustible at high temperatures.

**HAZARDOUS DECOMPOSITION PRODUCTS:** N/A

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**PERSONAL PRECAUTIONS:** Evacuate area. Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves.

**ACCIDENTAL RELEASE MEASURES:** Avoid formation of dust, sweep up spill and place in sealed container and hold for disposal. Ventilate area and wash spill site after material pickup is complete.

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## SECTION 7: HANDLING AND STORAGE

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**HANDLING AND STORAGE:** Keep locked up. Keep away from heat, sources of ignition and incompatibles such as oxidizing agents. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Avoid contact with skin and eyes; do not breathe dust. Avoid prolonged or repeated exposure. Immediately remove all contaminated clothing. Wash hands before breaks and after work. Avoid eating, drinking and storage of food in the work room. Store tightly sealed at -20°C.

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

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**ENGINEERING CONTROLS:** Use only in chemical fume hood. Safety shower and eye bath.  
**VENTILATION:** Government approved respirator.  
**EYE PROTECTION:** Chemical safety goggles.  
**SKIN PROTECTION:** Compatible gloves, protective coat or clothing.  
**SECTION 8 NOTES:** Wash thoroughly after handling. Wash contaminated clothing before reuse.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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**APPEARANCE:** White to off-white solid.  
**ODOR:** N/A  
**pH AS SUPPLIED:** N/A  
**BOILING POINT:** N/A  
**MELTING POINT:** N/A  
**FREEZING POINT:** N/A  
**VAPOR PRESSURE (mmHg):** N/A  
**VAPOR DENSITY (AIR = 1):** N/A  
**SPECIFIC GRAVITY (H<sub>2</sub>O = 1):** N/A  
**EVAPORATION RATE:** N/A  
**BASIS (=1):** N/A  
**SOLUBILITY:** Soluble in ether or ethanol:chloroform:acetone (3:5:4) (warm); practically insoluble in water.  
**MOLECULAR WEIGHT:** 304.2

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## SECTION 10: STABILITY AND REACTIVITY

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**STABILITY:** Stable. Avoid strong oxidizing agents.  
**HAZARDOUS DECOMPOSITION:** Carbon monoxide, carbon dioxide, nitrogen oxides, hydrogen chloride.  
**HAZARDOUS POLYMERIZATION:** Will not occur.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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**RTECS #:** ES7525000

**TOXICOLOGICAL INFORMATION:** TOXIC. Harmful by inhalation, ingestion, or skin absorption. May be irritant by inhalation, ingestion, or skin absorption. Exposure may cause drug fever, myelosuppression, hepatotoxicity, infertility, seizures, and G.I. toxicity. Target organ is bone marrow and blood. To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

**LD50:** Rat [Oral]: 76 mg/kg  
Rat [Intraperitoneal]: 14 mg/kg  
Rat [Intracerebral]: > 400 µg/kg  
Mouse [Oral]: 80 mg/kg  
Mouse [Intraperitoneal]: 20 mg/kg  
Mouse [Subcutaneous]: 26 mg/kg

**CHRONIC EXPOSURE:** Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

**CHRONIC EXPOSURE-CARCINOGEN:** This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification. Tumorigenic, carcinogenic by RTECS criteria in human. Blood: Leukemia. IARC CARCINOGEN LIST: Group 1.

**CHRONIC EXPOSURE-MUTAGEN:** Not available.

**CHRONIC EXPOSURE-TERATOGEN:** Not available.

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## SECTION 12: ECOLOGICAL INFORMATION

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ECOLOGICAL INFORMATION: N/A

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## SECTION 13: DISPOSAL CONSIDERATIONS

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WASTE DISPOSAL METHOD: Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

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## SECTION 14: TRANSPORT INFORMATION

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### INTERNATIONAL TRANSPORT REGULATIONS:

LAND – ROAD/RAILWAY: ADR/RID: Not available.  
SEA: IMDG: Not available.  
AIR: IATA-DGR: Not available.  
SPECIAL PROVISIONS FOR TRANSPORT: N/A

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## SECTION 15: REGULATORY INFORMATION

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### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES:

SYMBOL OF DANGER: T, toxic  
R-PHRASES: R23/24/25 - Toxic by inhalation, in contact with skin and if swallowed.  
R36/37/38 - Irritating to eyes, respiratory system and skin.  
R45 - May cause cancer.  
S-PHRASES: S7 - Keep container tightly closed.  
S22 - Do not breathe dust.  
S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.  
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

U.S. FEDERAL REGULATIONS: California Prop - 65: This product is or contains chemical(s) known to the state of California to cause developmental toxicity.

HCS CLASSIFICATION: Not available.

WHMIS (CANADA): WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

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## SECTION 16: OTHER INFORMATION

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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. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Alexis Corporation shall not be held liable for any damage resulting from handling or from contact with the above product.**

**For R&D use only. Not for drug, household or other uses.**