

MATERIAL SAFETY DATA SHEET

MSDS DATE: 04/12/07

FILE NO.: ALX-400-050

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Mitoxantrone . dihydrochloride
SYNONYMS: 1,4-Dihydroxy-5,8-bis[[2-[(2-hydroxyethyl)amino]ethyl]amino]-9,10-anthracenedione . dihydrochloride
PRODUCT CODES: ALX-400-050
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SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

<u>Formula:</u>	<u>CAS #</u>	<u>EC #</u>	<u>Annex I Index #</u>
$C_{22}H_{28}N_4O_6 \cdot 2HCl$	70476-82-3	N/A	N/A

SECTION 3: HAZARDS IDENTIFICATION

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

SECTION 4: FIRST AID MEASURES

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.

SECTION 5: FIRE FIGHTING MEASURES

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

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.

SECTION 7: HANDLING AND STORAGE

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

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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Blue to black crystalline 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 (H₂O = 1): N/A
EVAPORATION RATE: N/A
BASIS (=1): N/A
SOLUBILITY: Soluble in water; slightly soluble in 100% ethanol or methanol; insoluble in acetonitrile or acetone.
MOLECULAR WEIGHT: 444.5 . 72.9

SECTION 10: STABILITY AND REACTIVITY

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

SECTION 11: TOXICOLOGICAL INFORMATION

RTECS # : CB5748500

TOXICOLOGICAL INFORMATION: TOXIC. Harmful by inhalation, ingestion, or skin absorption. May be irritant by inhalation, ingestion, or skin absorption. May cause heritable genetic damage. May cause harm to the unborn child. Target organs are liver, central nervous system, heart, bone marrow. To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

LD50: Mouse [Intraperitoneal]: 7'100 µg/kg
Mouse [Subcutaneous]: 20'910 µg/kg
Mouse [Intravenous]: 6'600 µg/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: IARC CARCINOGEN LIST: Group 2B.

CHRONIC EXPOSURE-MUTAGEN: Not available.

CHRONIC EXPOSURE-TERATOGEN: May cause congenital malformations in the fetus.

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SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: N/A

SECTION 13: DISPOSAL CONSIDERATIONS

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.

SECTION 14: TRANSPORT INFORMATION

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

SECTION 15: REGULATORY INFORMATION

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.
R46 - May cause heritable genetic damage.
R61 - May cause harm to the unborn child.
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: Not available.
HCS CLASSIFICATION: Not available.
WHMIS (CANADA): Not available.

SECTION 16: OTHER INFORMATION

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.**

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