

## 1 Identification

### Product identifier

**Product name:** Mitoxantrone dihydrochloride

**Stock number:** J66341

**CAS Number:**

70476-82-3

**EC number:**

274-619-1

**Relevant identified uses of the substance or mixture and uses advised against.**

**Identified use:** SU24 Scientific research and development

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

**Information Department:** Health, Safety and Environmental Department

**Emergency telephone number:**

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

**Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)**



GHS06 Skull and crossbones

Acute Tox. 2 H310 Fatal in contact with skin.



GHS08 Health hazard

Muta. 1A H340 May cause genetic defects.

Repr. 1A H360 May damage fertility or the unborn child.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

### Hazard pictograms



GHS06 GHS08

### Signal word

**Danger**

### Hazard statements

H302 Harmful if swallowed.

H310 Fatal in contact with skin.

H340 May cause genetic defects.

H360 May damage fertility or the unborn child.

### Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P281 Use personal protective equipment as required.

P361 Take off immediately all contaminated clothing.

P302+P350 IF ON SKIN: Gently wash with plenty of soap and water.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### WHMIS classification

D1B - Toxic material causing immediate and serious toxic effects

D2A - Very toxic material causing other toxic effects



### Classification system

**HMIS ratings (scale 0-4)**

**(Hazardous Materials Identification System)**

HEALTH 2 Health (acute effects) = 2

FIRE 1 Flammability = 1

REACTIVITY 1 Physical Hazard = 1

### Other hazards

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

**Product name: Mitoxantrone dihydrochloride**

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### 3 Composition/information on ingredients

**Chemical characterization: Substances**

**CAS# Description:**

70476-82-3 1,4-Dihydroxy-5,8-bis[[2-[(2-hydroxyethyl)amino]ethyl]amino]-9,10-anthracenedione dihydrochloride

**Identification number(s):**

**EC number:** 274-619-1

### 4 First-aid measures

**Description of first aid measures**

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

**After eye contact** Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing** Seek medical treatment.

**Information for doctor**

**Most important symptoms and effects, both acute and delayed** No further relevant information available.

**Indication of any immediate medical attention and special treatment needed** No further relevant information available.

### 5 Fire-fighting measures

**Extinguishing media**

**Suitable extinguishing agents** Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture**

If this product is involved in a fire, the following can be released:

Carbon monoxide and carbon dioxide

Nitrogen oxides (NOx)

Hydrogen chloride (HCl)

**Advice for firefighters**

**Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

### 6 Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Environmental precautions:** Do not allow product to reach sewage system or any water course.

**Methods and material for containment and cleaning up:**

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

**Prevention of secondary hazards:** No special measures required.

**Reference to other sections**

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

### 7 Handling and storage

**Handling**

**Precautions for safe handling**

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Open and handle container with care.

**Information about protection against explosions and fires:** No information known.

**Conditions for safe storage, including any incompatibilities**

**Storage**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Store away from oxidizing agents.

**Further information about storage conditions:**

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

**Specific end use(s)** No further relevant information available.

### 8 Exposure controls/personal protection

**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**Control parameters**

**Components with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** No data

**Exposure controls**

**Personal protective equipment**

**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use suitable respirator when high concentrations are present.

**Recommended filter device for short term use:**

Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

(Contd. on page 3)  
USA

|  |      |                    |      |      |                 |        |      |                    |
|--|------|--------------------|------|------|-----------------|--------|------|--------------------|
| <b>Product name: Mitoxantrone dihydrochloride</b>  |      |                    |      |      |                 |        |      |                    |
| <div><div>Protection of hands:<br/>Impervious gloves<br/>Check protective gloves prior to each use for their proper condition.<br/>The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.<br/>Penetration time of glove material (in minutes) Not determined<br/>Eye protection: Safety glasses<br/>Body protection: Protective work clothing.</div><div>(Contd. of page 2)</div></div>  |      |                    |      |      |                 |        |      |                    |
| <b>9 Physical and chemical properties</b>  |      |                    |      |      |                 |        |      |                    |
| <div><div>Information on basic physical and chemical properties<br/>General Information<br/>Appearance:<br/>Form: Crystalline solid<br/>Color: Blue to black<br/>Odor: Not determined<br/>Odor threshold: Not determined.</div><div>pH-value: Not applicable.</div><div>Change in condition<br/>Melting point/Melting range: Not determined<br/>Boiling point/Boiling range: Not determined<br/>Sublimation temperature / start: Not determined<br/>Flammability (solid, gaseous) Not determined.<br/>Ignition temperature: Not determined<br/>Decomposition temperature: Not determined<br/>Auto igniting: Not determined.</div><div>Danger of explosion: Not determined.<br/>Explosion limits:<br/>Lower: Not determined<br/>Upper: Not determined<br/>Vapor pressure: Not applicable.<br/>Density: Not determined<br/>Relative density Not determined.<br/>Vapor density Not applicable.<br/>Evaporation rate Not applicable.<br/>Solubility in / Miscibility with<br/>Water: Soluble<br/>Partition coefficient (n-octanol/water): Not determined.<br/>Viscosity:<br/>dynamic: Not applicable.<br/>kinematic: Not applicable.<br/>Other information No further relevant information available.</div></div>  |      |                    |      |      |                 |        |      |                    |
| <b>10 Stability and reactivity</b>   |      |                    |      |      |                 |        |      |                    |
| <div><div>Reactivity No information known.<br/>Chemical stability Stable under recommended storage conditions.<br/>Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.<br/>Possibility of hazardous reactions Reacts with strong oxidizing agents<br/>Conditions to avoid No further relevant information available.<br/>Incompatible materials: Oxidizing agents<br/>Hazardous decomposition products:<br/>Carbon monoxide and carbon dioxide<br/>Nitrogen oxides<br/>Hydrogen chloride (HCl)</div></div>  |      |                    |      |      |                 |        |      |                    |
| <b>11 Toxicological information</b>  |      |                    |      |      |                 |        |      |                    |
| <div><div>Information on toxicological effects<br/>Acute toxicity:<br/>Harmful in contact with skin.<br/>Harmful if swallowed.<br/>Danger through skin absorption.<br/>The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.</div><div>LD/LC50 values that are relevant for classification:<br/><table><tr><td>Oral</td><td>LD50</td><td>682 mg/kg (rat)</td></tr><tr><td>Dermal</td><td>LD50</td><td>125 mg/kg (rabbit)</td></tr></table></div><div>Skin irritation or corrosion: May cause irritation<br/>Eye irritation or corrosion: May cause irritation<br/>Sensitization: No sensitizing effects known.<br/>Germ cell mutagenicity:<br/>May cause genetic defects.<br/>The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.<br/>Carcinogenicity: IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.<br/>Reproductive toxicity: May damage fertility or the unborn child.<br/>Specific target organ system toxicity - repeated exposure: No effects known.<br/>Specific target organ system toxicity - single exposure: No effects known.<br/>Aspiration hazard: No effects known.<br/>Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.<br/>Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.</div></div> |      |                    | Oral | LD50 | 682 mg/kg (rat) | Dermal | LD50 | 125 mg/kg (rabbit) |
| Oral   | LD50 | 682 mg/kg (rat)    |      |      |                 |        |      |                    |
| Dermal   | LD50 | 125 mg/kg (rabbit) |      |      |                 |        |      |                    |
| <b>12 Ecological information</b>   |      |                    |      |      |                 |        |      |                    |
| <div><div>Toxicity<br/>Aquatic toxicity: No further relevant information available.<br/>Persistence and degradability No further relevant information available.<br/>Bioaccumulative potential No further relevant information available.<br/>Mobility in soil No further relevant information available.<br/>Additional ecological information:<br/>General notes:<br/>Do not allow product to reach ground water, water course or sewage system, even in small quantities.</div><div>(Contd. on page 4)</div></div>  |      |                    |      |      |                 |        |      |                    |

|   |   |
|---|---|
| Product name: Mitoxantrone dihydrochloride  |   |
| Danger to drinking water if even extremely small quantities leak into the ground.<br>Avoid transfer into the environment.<br>Results of PBT and vPvB assessment<br>PBT: Not applicable.<br>vPvB: Not applicable.<br>Other adverse effects No further relevant information available.  |   |
| (Contd. of page 3)  |   |
| 13 Disposal considerations  |   |
| Waste treatment methods<br>Recommendation Consult state, local or national regulations to ensure proper disposal.<br>Uncleaned packagings:<br>Recommendation: Disposal must be made according to official regulations.<br>Recommended cleansing agent: Water, if necessary with cleansing agents.   |   |
| 14 Transport information  |   |
| UN-Number<br>DOT, IMDG, IATA  | UN2811  |
| UN proper shipping name<br>DOT<br>IMDG, IATA  | Toxic solids, organic, n.o.s. (Mitoxantrone dihydrochloride)<br>TOXIC SOLID, ORGANIC, N.O.S. (Mitoxantrone dihydrochloride) |
| Transport hazard class(es)<br>DOT   |   |
|   |   |
| Class<br>Label<br>Class<br>Label<br>IMDG, IATA  | 6.1 Toxic substances.<br>6.1<br>6.1 (T2) Toxic substances<br>6.1  |
|   |   |
| Class<br>Label  | 6.1 Toxic substances.<br>6.1  |
| Packing group<br>DOT, IMDG, IATA  | III   |
| Environmental hazards:  | Not applicable.   |
| Special precautions for user<br>EMS Number:   | Warning: Toxic substances<br>F-A,S-A  |
| Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code   | Not applicable.   |
| Transport/Additional information:   |   |
| DOT<br>Marine Pollutant (DOT):  | No  |
| UN "Model Regulation":  | UN2811, Toxic solids, organic, n.o.s. (Mitoxantrone dihydrochloride), 6.1, III  |
| 15 Regulatory information   |   |
| Safety, health and environmental regulations/legislation specific for the substance or mixture<br>GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)<br>Hazard pictograms   |   |
|    |   |
| GHS06 GHS08   |   |
| Signal word Danger<br>Hazard statements<br>H302 Harmful if swallowed.<br>H310 Fatal in contact with skin.<br>H340 May cause genetic defects.<br>H360 May damage fertility or the unborn child.<br>Precautionary statements<br>P280 Wear protective gloves/protective clothing/eye protection/face protection.<br>P281 Use personal protective equipment as required.<br>P361 Take off immediately all contaminated clothing.<br>P302+P350 IF ON SKIN: Gently wash with plenty of soap and water.<br>P405 Store locked up.<br>P501 Dispose of contents/container in accordance with local/regional/national/international regulations.   |   |
| National regulations<br>This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only. This product must be used by or directly under the supervision of a technically qualified individual as defined by TSCA. This product must not be used for commercial purposes or in formulations for commercial purposes.<br>This product is not listed on the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL).<br>SARA Section 313 (specific toxic chemical listings) Substance is not listed.<br>California Proposition 65 |   |
| Prop 65 - Chemicals known to cause cancer   |   |
| 70476-82-3 1,4-Dihydroxy-5,8-bis[[2-[(2-hydroxyethyl)amino]ethyl]amino]-9,10-anthracenedione dihydrochloride  |   |
| Prop 65 - Developmental toxicity  |   |
| 70476-82-3 1,4-Dihydroxy-5,8-bis[[2-[(2-hydroxyethyl)amino]ethyl]amino]-9,10-anthracenedione dihydrochloride  |   |
| Prop 65 - Developmental toxicity, female Substance is not listed.<br>Prop 65 - Developmental toxicity, male Substance is not listed.<br>Information about limitation of use: For use only by technically qualified individuals.   |   |
| (Contd. on page 5)<br>USA   |   |

**Product name:** Mitoxantrone dihydrochloride

**Other regulations, limitations and prohibitive regulations**  
**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.  
**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**  
Substance is not listed.  
**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.  
**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

(Contd. of page 4)

**16 Other information**  
Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department  
**Date of preparation / last revision** 11/24/2015 / -  
**Abbreviations and acronyms:**  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
DOT: US Department of Transportation  
IATA: International Air Transport Association  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
HMIS: Hazardous Materials Identification System (USA)  
WHMIS: Workplace Hazardous Materials Information System (Canada)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
vPvB: very Persistent and very Bioaccumulative  
ACGIH: American Conference of Governmental Industrial Hygienists (USA)  
OSHA: Occupational Safety and Health Administration (USA)  
NTP: National Toxicology Program (USA)  
IARC: International Agency for Research on Cancer  
EPA: Environmental Protection Agency (USA)

USA