

# Certificate of Analysis

**Product Name:** Mitoxantrone dihydrochloride

**Catalog No.:** 4250

**Batch No.:** 1

CAS Number: 70476-82-3

EC Number: 274-619-1

IUPAC Name: 1,4-Dihydroxy-5,8-bis[[2-[(2-hydroxyethyl)amino]ethyl]amino]-9,10-anthracenedione dihydrochloride

## 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:**  $C_{22}H_{28}N_4O_6 \cdot 2HCl \cdot H_2O$

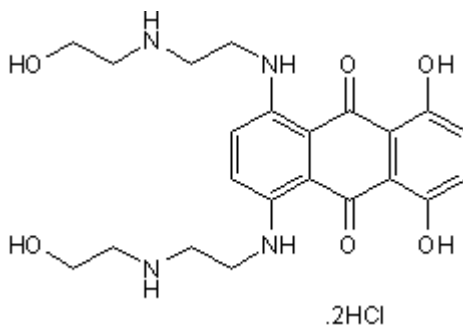
**Batch Molecular Weight:** 535.42

**Physical Appearance:** Black solid

**Solubility:** water to 5 mM  
DMSO to 75 mM

**Storage:** Desiccate at RT

**Batch Molecular Structure:**



## 2. ANALYTICAL DATA

**HPLC:** Shows 99.5% purity

**<sup>1</sup>H NMR:** Consistent with structure

**Mass Spectrum:** Consistent with structure

**Microanalysis:**

	Carbon	Hydrogen	Nitrogen
Theoretical	49.35	5.65	10.46
Found	49.25	5.93	10.35

Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use

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**Description:**

Type II DNA topoisomerase inhibitor. Disrupts DNA synthesis and repair and induces damage by DNA cross-linking. Also inhibits PIM1 kinase (IC<sub>50</sub> = 51 nM). Immunomodulatory, antineoplastic and chemotherapeutic agent. Also USP11 inhibitor (IC<sub>50</sub> = 3.15 μM). Induces cell death of pancreatic cancer cell lines expressing wild-type BRCA2.

**Physical and Chemical Properties:**

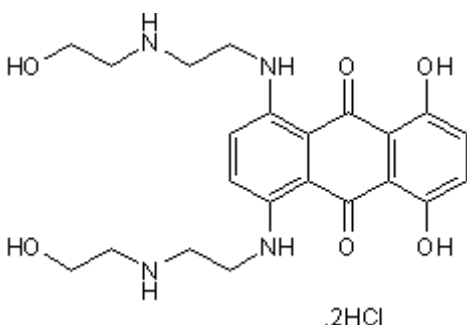
Batch Molecular Formula: C<sub>22</sub>H<sub>28</sub>N<sub>4</sub>O<sub>6</sub>.2HCl.H<sub>2</sub>O

Batch Molecular Weight: 535.42

Physical Appearance: Black solid

**Minimum Purity:** >98%

**Batch Molecular Structure:**



**Storage:** Desiccate at RT

CAUTION - This product is light sensitive and we recommend that the solid material and any solutions obtained are protected from exposure to light.

**Solubility & Usage Info:**

water to 5 mM

DMSO to 75 mM

**Stability and Solubility Advice:**

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. Our standard recommendations are:

**SOLIDS:** Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.

**SOLUTIONS:** We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

**References:**

**Crespi et al** (1986) Mitoxantrone affects topoisomerase activities in human breast cancer cells. *Biochem.Biophys.Res.Comm.* **136** 521. PMID: 3010982.

**Scott and Figgitt** (2004) Mitoxantrone: a review of its uses in multiple sclerosis. *CNS Drugs.* **18** 379. PMID: 15089110.

**Wan et al** (2013) A new target for an old drug: identifying mitoxantrone as a nanomolar inhibitor of PIM1 kinase via kinome-wide selectivity modeling. *J.Med.Chem.* **56** 2619. PMID: 23442188.

**Burkhart et al** (2013) Mitoxantrone targets human ubiquitin-specific peptidase 11 (USP11) and is a potent inhibitor of pancreatic cancer cell survival. *Mol.Cancer Res.* **11** 901. PMID: 23696131.

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