1. PHYSICAL AND CHEMICAL PROPERTIES

Batch Molecular Formula: \( \text{C}_7\text{H}_{15}\text{Cl}_2\text{N}_2\text{O}_2\text{P} \cdot \text{H}_2\text{O} \)
Batch Molecular Weight: 279.11
Physical Appearance: White solid
Solubility: water to 100 mM
DMSO to 100 mM
Storage: Store at -20°C
Batch Molecular Structure:

2. ANALYTICAL DATA

HPLC: Shows 99.8% purity
\(^1\text{H} \text{NMR:} \) Consistent with structure
Mass Spectrum: Consistent with structure
Microanalysis:

<table>
<thead>
<tr>
<th></th>
<th>Carbon</th>
<th>Hydrogen</th>
<th>Nitrogen</th>
<th>Beryllium</th>
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<td>6.14</td>
<td>10.04</td>
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<td>6.11</td>
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Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use
**Product Name:** Cyclophosphamide  
**Catalog No.:** 4091  
**Batch No.:** 4

**CAS Number:** 50-18-0  
**IUPAC Name:** 2-[Bis(2-chloroethyl)amino]tetrahydro-2H-1,3,2-oxazaphosphorine 2-oxide

**Description:**
Nitrogen mustard alkylating agent and prodrug. Phosphoramid mustard (active metabolite) forms DNA cross-links leading to cell death. Inhibits aldehyde dehydrogenase 1 (ALDH1) through its degradation product acrolein. Chemotherapeutic for the treatment of breast cancer; regulates Bax and Bcl-2 expression when administered with etoposide (Cat. No. 1226) in breast cancer cell lines.

**Physical and Chemical Properties:**
- **Batch Molecular Formula:** C7H15Cl2N2O4P.H2O
- **Batch Molecular Weight:** 279.11
- **Physical Appearance:** White solid
- **Minimum Purity:** >99%

**Batch Molecular Structure:**

![Batch Molecular Structure](image)

**Storage:** Store at -20°C

**Solubility & Usage Info:**
- water to 100 mM
- DMSO to 100 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:**
- **Ren et al.** (1999) Inhibition of human aldehyde dehydrogenase 1 by the 4-hydroxycyclophosphamide degradation product acrolein. Drug Metab. Disp. 27 133.
- **Hengstler et al.** (1992) DNA strand breaks and DNA cross-links in peripheral mononuclear blood cells of ovarian cancer patients during chemotherapy with cyclophosphamide/carboplatin. Cancer Res. 15 52.