

# Certificate of Analysis

[www.tocris.com](http://www.tocris.com)

**Product Name:** Zoledronic Acid

**Catalog No.:** 6111

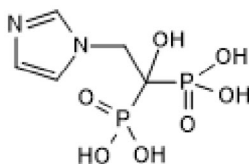
**Batch No.:** 1

CAS Number: 118072-93-8

IUPAC Name: [1-Hydroxy-2-(1*H*-imidazol-1-yl)ethylidene]bisphosphonic acid

## 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:** C<sub>5</sub>H<sub>10</sub>N<sub>2</sub>O<sub>7</sub>P<sub>2</sub>·2H<sub>2</sub>O  
**Batch Molecular Weight:** 308.12  
**Physical Appearance:** Off White solid  
**Solubility:** 1.1eq. NaOH to 50 mM water to 3 mM  
**Storage:** Store at +4°C  
**Batch Molecular Structure:**



## 2. ANALYTICAL DATA

**HPLC:** Shows 99.1% purity  
**<sup>1</sup>H NMR:** Consistent with structure  
**Mass Spectrum:** Consistent with structure

**Microanalysis:**

	Carbon	Hydrogen	Nitrogen
Theoretical	19.49	4.58	9.09
Found	19.5	4.2	8.89

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

**Product Name:** Zoledronic Acid

**Catalog No.:** 6111

**Batch No.:** 1

CAS Number: 118072-93-8

IUPAC Name: [1-Hydroxy-2-(1*H*-imidazol-1-yl)ethylidene]bisphosphonic acid

**Description:**

Zoledronic Acid is a potent bisphosphonate farnesyl diphosphate (FPP) synthase inhibitor ( $IC_{50}$  = 20 nM). Inhibits osteoclast-mediated bone resorption. Also inhibits Ras signaling and tumor growth, and induces apoptosis in pancreatic cancer cells. Reverses epithelial-mesenchymal transition and inhibits breast cancer cell renewal via inactivation of NF- $\kappa$ B.

**Physical and Chemical Properties:**

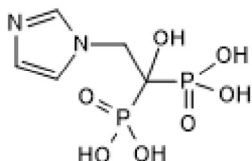
Batch Molecular Formula:  $C_5H_{10}N_2O_7P_2 \cdot 2H_2O$

Batch Molecular Weight: 308.12

Physical Appearance: Off White solid

**Minimum Purity:** ≥98%

**Batch Molecular Structure:**



**Storage:** Store at +4°C

**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:**

1.1eq. NaOH to 50 mM  
water to 3 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. \*Unless contradicted by product-specific protocols or instructions, our standard recommendations apply:

**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:**

**Schech *et al*** (2013) Zoledronic acid reverses the epithelial-mesenchymal transition and inhibits self-renewal of breast cancer cells through inactivation of NF- $\kappa$ B. *Mol.Cancer Ther.* **12** 1356. PMID: 23619300.

**Tassone *et al*** (2003) Zoledronic acid induces antiproliferative and apoptotic effects in human pancreatic cancer cells *in vitro*. *Br.J.Cancer* **88** 1971. PMID: 12799645.

**Dunford *et al*** (2001) Structure-activity relationships for inhibition of farnesyl diphosphate synthase *in vitro* and inhibition of bone resorption *in vivo* by nitrogen-containing bisphosphonates. *J.Pharmacol.Exp.Ther.* **296** 235. PMID: 11160603.

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

**bio-techne.com**

info@bio-techne.com  
techsupport@bio-techne.com

**North America**

Tel: (800) 343 7475

**China**

info.cn@bio-techne.com  
Tel: +86 (21) 52380373

**Europe Middle East Africa**

Tel: +44 (0)1235 529449

**Rest of World**

www.tocris.com/distributors  
Tel: +1 612 379 2956