



## CERTIFICATE OF ANALYSIS

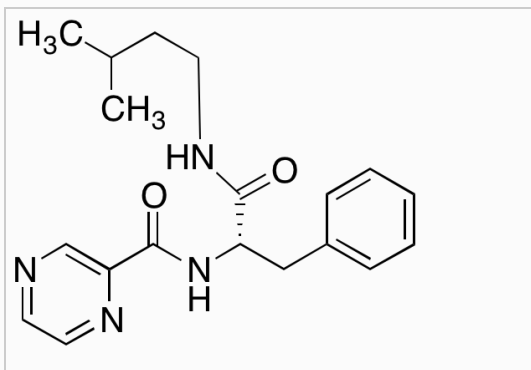
20 Martin Ross Avenue, North York, ON, M3J 2K8, CANADA  
Tel: (416) 665-9696, Fax: (416) 665-4439  
Email: orders.trc@lgcgroup.com Website: www.trc-canada.com

### 1. Identification

**Catalogue Number:** M291300

**Product:** N-[(1S)-2-[(3-Methylbutyl)amino]-2-oxo-1-(phenylmethyl)ethyl]-2-pyrazinecarboxamide

**Structure:**



**CAS Number:** 1446194-56-4

**Synonym:** Bortezomib Impurity;

**Molecular Formula:**

C<sub>19</sub>H<sub>24</sub>N<sub>4</sub>O<sub>2</sub>

**Molecular weight:**

340.42

**Source of Product:**

Synthetic

**Solubility:**

Chloroform (Slightly),  
Dichloromethane (Slightly)

**Lot Number:** 23-DPP-115-3

**Purity:** 98%

**Shipping Condition:** This Product Is Stable To Be Shipped At Room Temperature

**Storage Condition:** -20°C

### 2. Warning

**Warning 1:**

**Warning 2:**

**Warning 3:**

### 3. Analytical Information

Tests:	Specifications:	Results:
Appearance	White to Off-White Solid	White to Off-White Solid
NMR	Conforms to Structure	Conforms
Elemental Analysis	Conforms	%C: 66.50, %H: 7.19, %N: 16.32
MS	Conforms to Structure	Conforms
HPLC Purity	Report Result	98.56% (210 nm)
Specific Rotation	Report Result	-13.9° (c = 0.5, Chloroform)

**Additional Information:** N/A

Purity is based on the analytical results of the tests performed. NMR and Elemental Analysis (if available) may have an accuracy of ± 2%. Isotopic purity is based on mass distribution observed. The contents of the specifications are subject to change without advance notice, and the specification values displayed here are the most up to date values.

### 4. Signatures

Reviewed By	Reviewed By	C of A Approved By	Test Date	Retest Date
Nicole Yip	Toni Rantanen	Christina Gouliaras	9/1/2022	8/30/2026