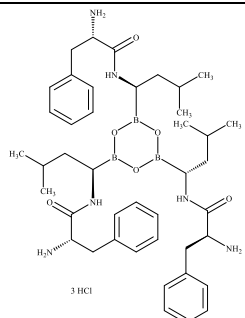


# Certificate of Analysis

Certificate No.: 20200805002

Date: August 5, 2020

Retest date: July 22, 2023

<b>Compound Name:</b>	<b>Bortezomib Impurity 33 TriHCl</b>	
<b>Synonyms:</b>	(2S,2'S,2" S)-N,N,N"-((1R,1'R,1" R)-(1,3,5,2,4,6-trioxatriborinane-2,4,6-triyl)tris(3-methylbutane-1,1-diy))tris(2-amino-3-phenylpropanamide), hydrochloride (1:3)	
<b>TLC Catalogue Number:</b>	B-4651	
<b>CAS Number:</b>	N/A	
<b>Molecular Weight:</b>	780.43 3*36.46	
<b>Molecular Formula:</b>	C <sub>42</sub> H <sub>63</sub> B <sub>3</sub> N <sub>6</sub> O <sub>6</sub> . 3 HCl	
<b>Source:</b>	TLC Pharmaceutical Standards	
<b>Source Lot No.:</b>	3928-018A7	
<b>Storage Conditions:</b>	Store at 2-8 °C	
<b>Solubility:</b>	Methanol, DMSO, Water	

Test Description	Specifications	Results
<b>Visual Description</b>	White to off-white solid	<b>Conforms</b>
<b>Identification</b>		
<b>IR</b>	Conforms to structure	<b>Conforms</b>
<b>MS</b>	Conforms to structure	<b>Conforms</b>
<b><sup>1</sup>H NMR</b>	Conforms to structure	<b>Conforms</b>
<b>Elemental Analysis</b>	Conforms to structure	<b>Conforms</b>
<b>Purity (HPLC)</b>	Not less than 95.0%	<b>99.4%</b>
<b>Impurity (HPLC)</b>	RT 4.95, 0.32%; RT 5.39, 0.23%	
<b>Optical Rotation</b>	N/A	$[\alpha]_D^{25.0}(c=0.37, H_2O): +5.1^\circ$
<b>Residual Solvents (NMR)</b>	0.3% tetrahydrofuran	
<b>Assay (qNMR)</b>	Not less than 90.0%	<b>90.2%</b>
<b>Recommendation:</b>	<b>Released.</b>	

Name	Department	Signature	Date
Reviewed and approved by:	Analytical Services		
Approved by:	Quality Assurance		

**Attachments:** HPLC, IR, MS and NMR spectra.