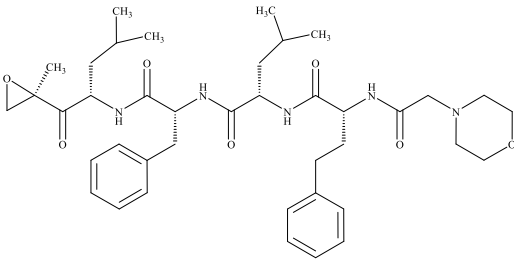


# Certificate of Analysis

Certificate No.: 20200605032

Date: June 5, 2020

Retest date: June 3, 2023

<b>Compound Name:</b>	<b>Carfilzomib Impurity 23</b>	
<b>Synonyms:</b>	(S)-4-methyl-N-((R)-1-(((S)-4-methyl-1-((R)-2-methyloxiran-2-yl)-1-oxopentan-2-yl)amino)-1-oxo-3-phenylpropan-2-yl)-2-((R)-2-(2-morpholinoacetamido)-4-phenylbutanamido)pentanamide	
<b>TLC Catalogue Number:</b>	C-121026	
<b>CAS Number:</b>	N/A	
<b>Molecular Weight:</b>	719.92	
<b>Molecular Formula:</b>	C <sub>40</sub> H <sub>57</sub> N <sub>5</sub> O <sub>7</sub>	
<b>Source:</b>	TLC Pharmaceutical Standards	
<b>Source Lot No.:</b>	3861-091A3	
<b>Storage Conditions:</b>	Store at 2-8 °C	
<b>Solubility:</b>	Methanol, DMSO	

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>Purity (HPLC)</b>	Not less than 95.0%	<b>99.5%</b>
<b>Impurity (HPLC)</b>	RT 10.13, 0.23%; RT 15.20, 0.20%	
<b>Water Content (KF)</b>	N/A	<b>0.7%</b>
<b>Optical Rotation</b>	N/A	[α] <sub>D</sub> <sup>25.0</sup> (c=0.44, CHCl <sub>3</sub> ): <b>+47.2°</b>
<b>Residual Solvents (NMR)</b>	No residual solvent	
<b>Assay (%)</b>	Not less than 90.0%	<b>98.8%</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.