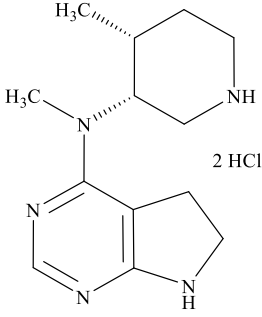


# Certificate of Analysis

Certificate No.: 2021117016

Date: November 17, 2021

Retest date: November 4, 2024

<b>Compound Name:</b>	<b>Tofacitinib Related Compound 23 DiHCl</b>	
<b>Synonyms:</b>	<i>N</i> -methyl- <i>N</i> -((3 <i>R</i> ,4 <i>R</i> )-4-methylpiperidin-3-yl)-6,7-dihydro-5 <i>H</i> -pyrrolo[2,3- <i>d</i> ]pyrimidin-4-amine, hydrochloride (1:2)	
<b>TLC Catalogue Number:</b>	T-117052	
<b>CAS Number:</b>	2640342-78-3	
<b>Molecular Weight:</b>	247.35 2*36.46	
<b>Molecular Formula:</b>	C <sub>13</sub> H <sub>21</sub> N <sub>5</sub> . 2 HCl	
<b>Source:</b>	TLC Pharmaceutical Standards	
<b>Source Lot No.:</b>	4313-079A14	
<b>Storage Conditions:</b>	Store at 2-8 °C	
<b>Solubility:</b>	Methanol, 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>98.6%</b>
<b>Impurity (HPLC)</b>	RT 12.15, 0.72%; RT 13.90, 0.54%	
<b>Water Content (KF)</b>	N/A	<b>1.1%</b>
<b>Optical Rotation</b>	N/A	$[\alpha]_D^{20.0}(c=0.31, CH_3OH)$ : <b>-31.5°</b>
<b>Residual Solvents (NMR)</b>	1.5% methanol	
<b>Assay (%)</b>	Not less than 90.0%	<b>96.0%</b>
<b>Recommendation:</b>	<b>Release.</b>	

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

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