

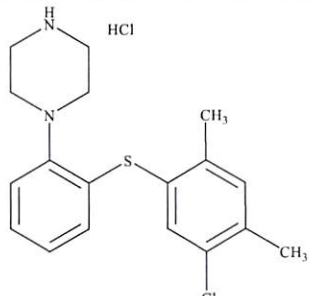
## Certificate of Analysis

Certificate No.: 20241227021


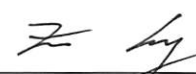
Date: December 27, 2024

Retest date: December 26, 2027

<b>Compound Name:</b> Vortioxetine Impurity 9 HCl	
<b>Synonyms:</b>	1-(2-((5-chloro-2,4-dimethylphenyl)thio)phenyl)piperazine, hydrochloride (1:1)
<b>TLC Catalogue Number:</b>	V-043010
<b>CAS Number:</b>	1240670-87-4 (free base)
<b>Molecular Weight:</b>	332.89 36.46
<b>Molecular Formula:</b>	C <sub>18</sub> H <sub>21</sub> ClN <sub>2</sub> S · HCl
<b>Source:</b>	TLC Pharmaceutical Standards
<b>Source Lot No.:</b>	1800-100A1
<b>Storage Conditions:</b>	Store at 2-8 °C
<b>Solubility:</b>	Methanol, DMSO



Test Description	Specifications	Results
<b>Visual Description</b>	Off-white solid	<b>Conforms</b>
<b>Identification</b>		
IR	Conforms to structure	<b>Conforms</b>
MS	Conforms to structure	<b>Conforms</b>
<sup>1</sup> H NMR	Conforms to structure	<b>Conforms</b>
<b>Purity (HPLC)</b>	Not less than 95.0%	<b>99.6%</b>
<b>Impurity (HPLC)</b>	RT 20.38, 0.12%; RT 20.74, 0.20%	
<b>Water Content (KF)</b>	N/A	<b>6.1%</b>
<b>Residual Solvents (NMR)</b>	0.2% dichloromethane	
<b>Assay (%)</b>	Not less than 90.0%	<b>93.3%</b>
<b>Recommendation:</b>	<b>Release.</b>	

Name	Department	Signature	Date
Reviewed and approved by:	Quality Control		01/06/2025
Approved by:	Quality Assurance		01/06/2025

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