

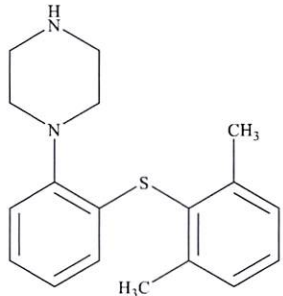
## Certificate of Analysis

Certificate No.: 20240425012

Date: April 25, 2024

Retest date: April 24, 2027

<b>Compound Name:</b> Vortioxetine Impurity 5	
<b>Synonyms:</b>	1-(2-((2,6-dimethylphenyl)thio)phenyl)piperazine
<b>TLC Catalogue Number:</b>	V-043006
<b>CAS Number:</b>	508233-76-9
<b>Molecular Weight:</b>	298.45
<b>Molecular Formula:</b>	C <sub>18</sub> H <sub>22</sub> N <sub>2</sub> S
<b>Source:</b>	TLC Pharmaceutical Standards
<b>Source Lot No.:</b>	4391-054A2
<b>Storage Conditions:</b>	Store at 2-8 °C
<b>Solubility:</b>	Methanol, DMSO, DMF



Test Description	Specifications	Results
<b>Visual Description</b>	Pale yellow 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>99.5%</b>
<b>Impurity (HPLC)</b>	RT 14.17, 0.23%; RT 18.48, 0.18%	
<b>Water Content (KF)</b>	N/A	<b>0.2%</b>
<b>Residual Solvents (NMR)</b>	0.2% methanol, 0.1% isopropyl ether and 0.2% ethyl acetate	
<b>Assay (%)</b>	Not less than 90.0%	<b>98.8%</b>
<b>Recommendation:</b>	<b>Release.</b>	

Name	Department	Signature	Date
Reviewed and approved by:	Quality Control	<i>Kelin Zhu</i>	04/26/2024
Approved by:	Quality Assurance	<i>Z. Ly</i>	04/26/2024

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