

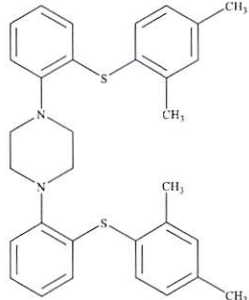
Certificate of Analysis

Certificate No.: 20230714012



Date: July 14, 2023

Retest date: June 30, 2026

Compound Name: Vortioxetine Impurity 22	
Synonyms:	1,4-bis(2-((2,4-dimethylphenyl)thio)phenyl)piperazine
TLC Catalogue Number:	V-043023
CAS Number:	2243045-82-9
Molecular Weight:	510.76
Molecular Formula:	C ₃₂ H ₃₄ N ₂ S ₂
Source:	TLC Pharmaceutical Standards
Source Lot No.:	5633-057A3
Storage Conditions:	Store at 2-8 °C
Solubility:	Trifluoroacetic acid



Test Description	Specifications	Results
Visual Description	White to off-white solid	Conforms
Identification		
IR	Conforms to structure	Conforms
MS	Conforms to structure	Conforms
¹ H NMR	Conforms to structure	Conforms
Elemental Analysis	Conforms to structure	Conforms
Residue (TGA at 800 °C)	N/A	0.0%
Residual Solvents (NMR)	2.7% dichloromethane	
Assay (qNMR)	Not less than 90.0%	96.8%
Recommendation:	Release. As the compound is not suitable for HPLC analysis due to the solubility limitation, therefore, HPLC data is not available.	

Name	Department	Signature	Date
Reviewed and approved by:	Quality Control		07 / 14 / 2023
Approved by:	Quality Assurance		07/14/2023

Attachments: IR, MS, NMR and TGA spectra.