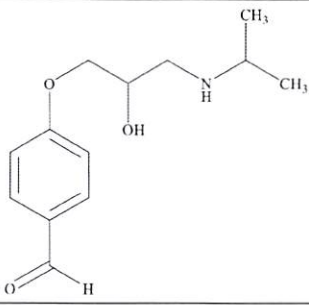


Certificate of Analysis



Certificate No.: 20231117002

Date: November 17, 2023

Retest date: November 16, 2026

Compound Name:	Bisoprolol EP Impurity L (Metoprolol EP Impurity C, Metoprolol USP Related Compound C (Free Form))	
Synonyms:	4-(2-hydroxy-3-(isopropylamino)propoxy)benzaldehyde	
TLC Catalogue Number:	B-095	
CAS Number:	29122-74-5	
Molecular Weight:	237.30	
Molecular Formula:	C ₁₃ H ₁₉ NO ₃	
Source:	TLC Pharmaceutical Standards	
Source Lot No.:	5782-095A1	
Storage Conditions:	Store at 2-8 °C	
Solubility:	Methanol, DMSO, DMF	

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
Purity (HPLC)	Not less than 95.0%	99.6%
Impurity (HPLC)	RT 4.14, 0.11%; RT 22.55, 0.17%	
Residual Solvents (NMR)	0.1% methanol and 0.5% acetonitrile	
Assay (qNMR)	Not less than 90.0%	98.1%
Recommendation:	Release.	

Name	Department	Signature	Date
Reviewed and approved by:	Quality Control		11/20/2023
Approved by:	Quality Assurance		11/20/2023

Attachments: HPLC, IR, MS and NMR spectra.