Certificate of Analysis

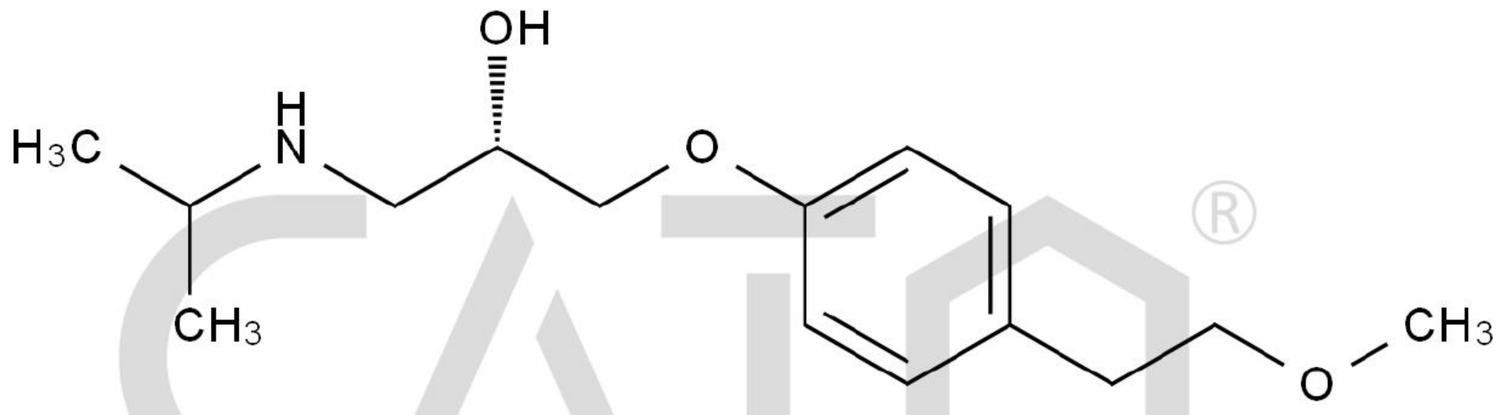
Reference Material & Standard

Product Name:	Metoprolol S-Isomer	**Catalogue Number:**	CP148266
Synonyms:	N/A	**Lot Number:**	0828-RH-0044
CAS Number:	81024-42-2	**Expiry Date:**	Nov 06, 2029
Molecular Formula:	$C_{15}H_{25}NO_3$	**Storage:**	-20°C±5°C Protected from light and Sealed
Molecular Weight:	267.36	**Shipping Condition:**	Shipping with Ice Packs

Warning:



Chemical Structure:



Test Items	Method	Results
Appearance	Visual inspection	White Solid
Identification	LCMS&UV&HNMR	Confirmed
Purity	HPLC	99.938%
Water Content	Karl Fischer	0.36%
Residual Solvents	NMR	Not detected in NMR
Assay		99.6%

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Comment:

The calculation of the mass balance method follows the formula (calculated on the non-dried basis):
*Assay (%) = (100%-Water Content-Residual Solvents) * Purity HPLC (%) /100%*
Water Content and Residual Solvents are considered as absolute effect, HPLC purity is considered as relative effect.

Signature:

Prepared by: Date: Aug 31, 2026

Reviewed by: Date: Aug 31, 2026

Approved by General Manager: Date: Aug 31, 2026

CATO Research Chemicals Inc.