

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

Certificate of Analysis

Date of Testing: 2023-06-07 13:33:39
 Date of Next Testing: 2025-05-27 13:33:39
 Product Name: **(S)-(-)-BINAP**
 CAS Number: 76189-56-5
 Specifications & Purity: $\geq 98\%$
 Lot #: I2104111
 SKU #: **B109538**
 Version: **0**
 Analysis #: **236615**
 Storage Temperature: Room temperature, Argon charged

Parameter	Limit Values	Result
Melting point	238-243 (°C)	241.30000 °C
Purity(HPLC)	98-100 (%)	98.18800 %
Specific Rotation $[\alpha]_{20/D}(c=0.3 \text{ in Toluene})$	-245--220 (°)	-233.50000 °
Optical purity(HPLC)(ee)	99-100 (%)	99.21500 %
Appearance (B109538)	White to Off-White Powder or Crystals	White to Off-White Powder or Crystals
Infrared spectrum	Conforms to Structure	Conforms to Structure
Proton NMR spectrum	Conforms to Structure	Conforms to Structure



John Su
QA & QC Manager