

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

Certificate of Analysis

Date of Testing: 2022-07-20 17:22:20

Date of Next Testing: 2024-07-09 17:22:20

Product Name: (S)-(-)-BINAP

CAS Number: 76189-56-5

Specifications & Purity: $\geq 98\%$

Lot #: G2219079

SKU #: B109538

Version: 0

Analysis #: 074817

Storage Temperature: Room temperature, Argon charged

Parameter	Limit Values	Result
Melting point	238-243 (°C)	242.67000 °C
Purity(HPLC)	98-100 (%)	98.40300 %
Specific Rotation $[\alpha]_{20/D}(c=0.3 \text{ in Toluene})$	-245--220 (°)	-244.26200 °
Optical purity(HPLC)(ee)	99-100 (%)	99.06000 %
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