

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

## Certificate of Analysis

Date of Testing: 2024-07-02 15:44:32

Date of Next Testing: 2026-06-22 15:44:32

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

CAS Number: 76189-56-5

Specifications & Purity:  $\geq 98\%$

Lot #: F2427132

SKU #: **B109538**

Version: **0**

Analysis #: **355763**

Storage Temperature: Room temperature, Argon charged

| Parameter                                                           | Limit Values                          | Result                                |
|---------------------------------------------------------------------|---------------------------------------|---------------------------------------|
| Melting point                                                       | 238-243 (°C)                          | 241.88000 °C                          |
| Specific Rotation [a] <sub>D</sub> <sup>20</sup> (c=0.3 in Toluene) | -245--220 (°)                         | -241.12600 °                          |
| Purity(HPLC)                                                        | 98-100 (%)                            | 98.11000 %                            |
| Optical purity(HPLC)(ee)                                            | 99-100 (%)                            | 99.00000 %                            |
| Appearance (B109538)                                                | White to Off-White Powder or Crystals | White to Off-White Powder or Crystals |
| Proton NMR spectrum                                                 | Conforms to Structure                 | Conforms to Structure                 |
| Infrared spectrum                                                   | Conforms to Structure                 | Conforms to Structure                 |



John Su  
QA & QC Manager