

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

## Certificate of Analysis

Date of Testing: 2022-08-29 11:21:50  
 Date of Next Testing: 2026-08-28 11:21:50  
 Product Name: **(1R,2R,3S,5R)-(-)-2,3-Pinenediol**  
 CAS Number: 22422-34-0  
 Specifications & Purity:  $\geq 98\%$ (GC)  
 Lot #: H2224024  
 SKU #: **R160959**  
 Version: **1**  
 Analysis #: **102769**  
 Storage Temperature: Room temperature

| Parameter                                                     | Limit Values                            | Result                                  |
|---------------------------------------------------------------|-----------------------------------------|-----------------------------------------|
| Purity(GC)                                                    | 98-100 (%)                              | 99.47900 %                              |
| Melting point                                                 | 54-58 (°C)                              | 56.57000 °C                             |
| Specific Rotation $[\alpha]_{20/D}(c=6.5 \text{ in Toluene})$ | -11- -5 (°)                             | -8.49800 °                              |
| Appearance(R160959)                                           | White to Almost white powder to crystal | White to Almost white powder to crystal |
| Proton NMR spectrum                                           | Conforms to Structure                   | Conforms to Structure                   |



John Su  
QA & QC Manager