

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

## Certificate of Analysis

Date of Testing: 2023-08-29 16:26:38  
 Date of Next Testing: 2026-08-28 16:26:38  
 Product Name: **MES monohydrate**  
 CAS Number: 145224-94-8  
 Specifications & Purity: UltraBio™, Suitable for molecular biology, Ultra pure, ≥99.5%(T)  
 Lot #: H2324573  
 SKU #: **M432121**  
 Version: **1**  
 Analysis #: **257048**  
 Storage Temperature: Room temperature

| Parameter                      | Limit Values | Result       |
|--------------------------------|--------------|--------------|
| Purity(Titration by 0.1M NaOH) | 99-100.5 (%) | 100.25000 %  |
| Water by Karl Fischer          | 0-9 (%)      | 4.59540 %    |
| Aluminium(Al)                  | 0-5 (ppm)    | 0.00000 ppm  |
| Barium(Ba)                     | 0-5 (ppm)    | 0.00000 ppm  |
| Bismuth(Bi)                    | 0-5 (ppm)    | 0.00000 ppm  |
| Calcium(Ca)                    | 0-20 (ppm)   | 0.00000 ppm  |
| Cadmium(Cd)                    | 0-5 (ppm)    | 0.00000 ppm  |
| Cobalt(Co)                     | 0-5 (ppm)    | 0.00000 ppm  |
| Chromium(Cr)                   | 0-5 (ppm)    | 0.00000 ppm  |
| Copper(Cu)                     | 0-5 (ppm)    | 0.00000 ppm  |
| Iron(Fe)                       | 0-5 (ppm)    | 0.00000 ppm  |
| Potassium(K)                   | 0-50 (ppm)   | 0.00000 ppm  |
| Lithium(Li)                    | 0-5 (ppm)    | 0.00000 ppm  |
| Magnesium(Mg)                  | 0-5 (ppm)    | 0.06260 ppm  |
| Manganese(Mn)                  | 0-5 (ppm)    | 0.00000 ppm  |
| Molybdenum(Mo)                 | 0-5 (ppm)    | 0.00000 ppm  |
| Sodium(Na)                     | 0-50 (ppm)   | 28.18370 ppm |
| Nickel(Ni)                     | 0-5 (ppm)    | 0.00000 ppm  |
| Lead(Pb)                       | 0-5 (ppm)    | 0.00000 ppm  |
| Strontium(Sr)                  | 0-5 (ppm)    | 0.00000 ppm  |
| Zinc(Zn)                       | 0-5 (ppm)    | 0.00000 ppm  |
| Arsenic traces(MHS-AAS)        | 0-0.1 (ppm)  | 0.00000 ppm  |
| Chloride (Cl-)                 | 0-50 (ppm)   | 0.00000 ppm  |
| Sulfate(SO <sub>4</sub> )      | 0-50 (ppm)   | 0.00000 ppm  |
| Sulfated Ash                   | 0-0.05 (%)   | 0.00000 %    |

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| Parameter                                                      | Limit Values                          | Result                                |
|----------------------------------------------------------------|---------------------------------------|---------------------------------------|
| PH(25 °C, 0.5 M in Water)                                      | 2.5-4                                 | 3.43000                               |
| UV Absorbance 260nm                                            | 0-0.03                                | 0.00300                               |
| UV Absorbance 280nm                                            | 0-0.02                                | 0.00200                               |
| Appearance(M432121)                                            | Colorless Or White Powder Or Crystals | Colorless or White Powder or Crystals |
| Extraneous Activities(DNAses, RNAses, Proteases, Phosphatases) | Not Detectable                        | not detectable                        |
| Proton NMR spectrum                                            | Conforms to Structure                 | Conforms to Structure                 |
| Residue (filter test)                                          | no residue                            | no residue                            |

A handwritten signature in black ink that reads "John Su".John Su  
QA & QC Manager