

## CERTIFICATE OF ANALYSIS

DATE : 29/01/2024  
 CUSTOMER :  
 ISEGEN REF. : 059689  
 D / N NO. : 059689  
 CONTAINER NO. : FCIU6655556  
 SEAL NO. : HLC0731547  
 VESSEL : GSL MELINA  
 MANUFACTURING DATE : 27/11/2023  
 EXPIRY DATE : 27/11/2026 PROVIDED PRODUCT STORED IN DRY, COOL CONDITIONS AND NOT SUBJECT TO PRESSURE

### MATERIAL

DL MALIC ACID - FOOD GRADE ( Hydroxysuccinic Acid ) – 850um

Molecular mass : 134.1 g/mole CAS : 617-48-1

### BATCH NO

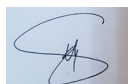
7231127

### QUANTITY

17500kg

| ANALYSIS                                         | METHOD OF ANALYSIS          | SPECIFICATION                                                            | RESULTS  |
|--------------------------------------------------|-----------------------------|--------------------------------------------------------------------------|----------|
| Appearance                                       | Isegen Proc. 1.22.5.2.21    | White or nearly white granules                                           | Complies |
| Identification                                   | FCC 11                      | To comply with std. scan                                                 | Complies |
| Assay as Malic Acid                              | FCC 11                      | NLT 99.0% and NMT 100.5% of C <sub>4</sub> H <sub>6</sub> O <sub>5</sub> | 99.56    |
| Test for Malate                                  | Isegen Proc. 1.22.5.2.31    | Passes test                                                              | Passes   |
| Water                                            | Karl Fischer                | NMT 0.3% m/m                                                             | 0.19     |
| Melting Point                                    | Isegen Proc. 1.22.5.2.3     | 127 → 132 °C                                                             | 130.3    |
| Fumaric Acid                                     | FCC 11                      | NMT 1.0% m/m                                                             | 0.64     |
| Maleic Acid                                      | FCC 11                      | NMT 0.05% m/m                                                            | 0.003    |
| Heavy Metals as Pb                               | FCC 11                      | NMT 5 mg/kg                                                              | <5       |
| Lead                                             | ICP                         | NMT 2 mg/kg                                                              | <2       |
| Arsenic                                          | ICP                         | NMT 1 mg/kg                                                              | <1       |
| Mercury                                          | ICP                         | NMT 0.1 mg/kg                                                            | <0.1     |
| Residue on Ignition (Sulphated Ash )             | FCC 11                      | NMT 0.1% m/m                                                             | 0.065    |
| Water Insoluble Matter                           | FCC 11                      | NMT 0.1% m/m                                                             | 0.018    |
| Readily Oxidisable Substances                    | Isegen Proc. 1.22.5.2.16    | Passes Test – 3 minutes (min)                                            | Complies |
| Chlorides                                        | Isegen Proc. 1.22.5.2.17    | NMT 40 mg/kg                                                             | Complies |
| Specific Rotation [α] <sub>D</sub> <sup>25</sup> | FCC 11                      | - 0.10° and + 0.10°                                                      | Complies |
| Particle Size Distribution                       | Isegen Proc. 1.22.5.2.14. 3 | NLT 98% thru 850 um                                                      | 99.76    |
|                                                  |                             | NMT 5% thru 150 um                                                       | 0.01     |

We confirm that this batch complies with FCC 11 and E296



**QA REPRESENTATIVE**