

## Certificate of Analysis

|                          |   |
|--------------------------|---|
| Date of Testing:         | 2023-08-19 16:57:20   |
| Date of Next Testing:    | 2026-08-18 16:57:20   |
| Product Name:            | <b>L-Cysteine hydrochloride</b>   |
| CAS Number:              | 52-89-1   |
| Specifications & Purity: | anhydrous, from non-animal source, BioReagent, suitable for cell culture, $\geq 98.0\%$ |
| Lot #:                   | H2318625  |
| SKU #                    | <b>L432833</b>  |
| Version                  | <b>1</b>  |
| <b>Analysis #:</b>       | <b>259741</b>   |
| Storage Temperature:     | Protected from light, Argon charged   |

| Parameter  | Limit Values                          | Result                                |
|--|---------------------------------------|---------------------------------------|
| Specific Rotation(c=8 in 1 M HCl at 20 deg C)              | 5.6-8.9 (°)                           | 7.00000 °                             |
| Heavy metals   | 0-10 (ppm)                            | 5.22 ppm                              |
| Arsenic(As)  | 0-1 (ppm)                             | 0.12100 ppm                           |
| Loss on drying   | 0-1 (%)                               | 0.75 %                                |
| Residue on ignition(Ash)                                   | 0-1 (%)                               | 0.06000 %                             |
| PH(1% in Water)  | 1.5-2.0                               | 1.70                                  |
| Assay(dry basis)   | 98-102.5 (%)                          | 100.10 %                              |
| Endotoxin Level  | $\leq 1$ (EU/mg)                      | 0.90000 EU/mg                         |
| Solubility in H <sub>2</sub> O , 50mg/ml, clear, colorless | pass                                  | Pass                                  |
| Infrared spectrum  | Conforms to structure                 | Conforms to Structure                 |
| Origin   | Non-Animal Source                     | non-animal source                     |
| Appearance(L432833)  | White to Off White Powder or Crystals | White to Off White Powder or Crystals |
| Cell Culture Test  | pass                                  | Pass                                  |
| Ninhydrin-Positive Substances                              | Conforms                              | Conforms                              |



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A handwritten signature in black ink that reads "John Su". The signature is written in a cursive, flowing style.

John Su  
QA & QC Manager