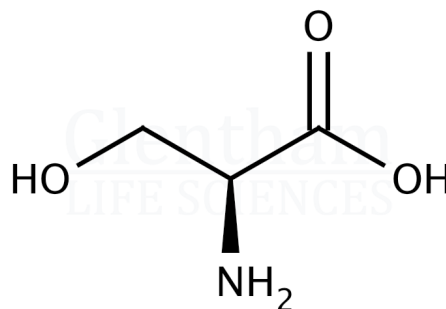


## Certificate of Analysis

|                   |   |
|-------------------|---|
| Product Name      | L-Serine                                      |
| Glentham Code     | GM1114  |
| CAS Number        | 56-45-1                                       |
| EINECS            | 200-274-3                                     |
| MDL Number        | MFCD00064224                                  |
| PubChem SID       | 310279962                                     |
| Batch Number      | 755XSL  |
| Molecular Weight  | 105.09  |
| Molecular Formula | C <sub>3</sub> H <sub>7</sub> NO <sub>3</sub> |
| Storage Temp.     | +20°C   |



| Property   | Specification                        | Batch 755XSL             |
|--|--------------------------------------|--------------------------|
| Physical Description                             | White crystals or crystalline powder | White crystalline powder |
| Identification (IR)                              | To conform to standard               | Conforms                 |
| Solubility (5% in water)                         | Clear, colourless solution           | Conforms                 |
| Specific Optical Rotation ([α] <sub>20/D</sub> ) | +14.0 - +15.6 °                      | +15.4°                   |
| Chloride   | ≤ 0.05%                              | Conforms                 |
| Sulphate   | ≤ 0.03%                              | Conforms                 |
| Iron (Fe)  | ≤ 30ppm                              | Conforms                 |
| Heavy Metals (as Pb)                             | ≤ 15ppm                              | Conforms                 |
| Any Individual Impurity                          | ≤ 0.5%                               | Conforms                 |
| Total Impurities                                 | ≤ 2.0%                               | Conforms                 |
| Residue on Ignition                              | ≤ 0.1%                               | 0.0%                     |
| Loss on Drying                                   | ≤ 0.2%                               | 0.02%                    |
| Assay  | 98.5 - 101.5 % (dried basis)         | 100.1%                   |
| Pharmacopoeia Specification(s)                   | USP                                  | Conforms to USP          |

|                       |            |
|-----------------------|------------|
| Specification Version | v1.1       |
| Manufacture Date      | 2021-05-30 |
| Re-Test Date          | 2030-02-04 |

Glentham Life Sciences confirm that the above referenced product conformed to the information displayed in this document on the quality release date. Please check [www.glentham.com](http://www.glentham.com) or contact us using the details above for the current version of this document.

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