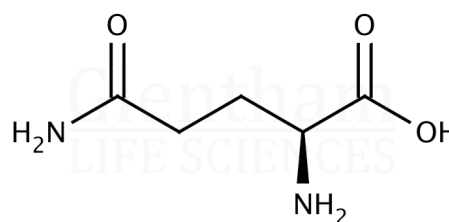


## Certificate of Analysis

|               |                                           |
|---------------|-------------------------------------------|
| Product Name  | L-Glutamine, USP grade, non-animal origin |
| Glentham Code | GM2001                                    |
| CAS Number    | 56-85-9                                   |
| EINECS        | 200-292-1                                 |
| MDL Number    | MFCD00008044                              |
| Batch Number  | 897FOK                                    |

|                   |                   |
|-------------------|-------------------|
| Molecular Weight  | 146.15            |
| Molecular Formula | $C_5H_{10}N_2O_3$ |
| Storage Temp.     | +20°C             |



| Property                                         | Specification                                          | Batch 897FOK |
|--------------------------------------------------|--------------------------------------------------------|--------------|
| Physical Description                             | White powder                                           | Conforms     |
| Identification (IR)                              | To conform to standard                                 | Conforms     |
| Solubility (2.5% in water)                       | Clear, colourless solution                             | Conforms     |
| Specific Optical Rotation ([α] <sub>20</sub> /D) | +6.3 - +7.3 °                                          | +6.5°        |
| Iron (Fe)                                        | ≤ 10ppm                                                | Conforms     |
| Heavy Metals                                     | ≤ 10ppm                                                | Conforms     |
| Chloride                                         | ≤ 0.05%                                                | ≤ 0.02%      |
| Sulphate                                         | ≤ 0.03%                                                | ≤ 0.02%      |
| Residue on Ignition                              | ≤ 0.1%                                                 | 0.04%        |
| Loss on Drying                                   | ≤ 0.3% (105°C, 3h)                                     | 0.02%        |
| Assay                                            | 99.0 - 101.0 % (dried basis)                           | 99.6%        |
| Pharmacopoeia Specification(s)                   | USP                                                    | Conforms     |
| Origin                                           | Fermentation from microbial source (non-animal origin) | Conforms     |

|                       |            |
|-----------------------|------------|
| Specification Version | v1.0       |
| Manufacture Date      | 2021-01-27 |
| Re-Test Date          | 2030-06-20 |

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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