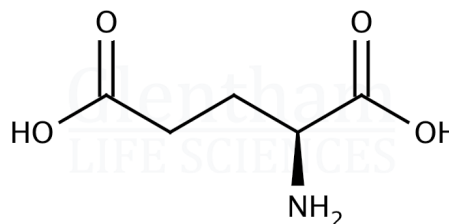


## Product Specification

|                   |   |
|-------------------|---|
| Product Name      | L-Glutamic acid, GlenCell™, suitable for cell culture |
| Glentham Code     | GM8976  |
| CAS Number        | 56-86-0   |
| EINECS            | 200-293-7   |
| MDL Number        | MFCD00002634  |
| Molecular Weight  | 147.13  |
| Molecular Formula | C <sub>5</sub> H <sub>9</sub> NO <sub>4</sub>         |
| Storage Temp.     | +20°C   |



| Property   | Specification                           |
|--|---|
| Physical Description                             | White crystalline powder                |
| Identification                                   | To pass tests                           |
| Solubility (5% in water)                         | Clear, colourless solution              |
| pH (1% in water)                                 | 3.0 - 3.5                               |
| Transmittance                                    | ≥ 98.0% (5% in water, 430nm, 10mm cell) |
| Specific Optical Rotation ([α] <sub>20/D</sub> ) | +31.5 - +32.2 °                         |
| Chloride (Cl)                                    | ≤ 0.02%                                 |
| Sulphate (SO <sub>4</sub> )                      | ≤ 0.02%                                 |
| Ammonium (NH <sub>4</sub> )                      | ≤ 0.02%                                 |
| Iron (Fe)  | ≤ 10ppm                                 |
| Arsenic (As <sub>2</sub> O <sub>3</sub> )        | ≤ 1ppm                                  |
| Heavy Metals (as Pb)                             | ≤ 5ppm                                  |
| Any Individual Impurity                          | ≤ 0.2%                                  |
| Total Impurities                                 | ≤ 0.6%                                  |
| Sulphated Ash                                    | ≤ 0.1%                                  |
| Loss on Drying                                   | ≤ 0.5%                                  |
| Endotoxins                                       | ≤ 6EU/g                                 |
| Assay  | 99.0 - 101.0 % (dried basis)            |
| Pharmacopoeia Specification(s)                   | EP                                      |
| Origin   | Non-animal origin                       |

|                       |   |            |
|-----------------------|---|------------|
| Specification Version | - | v1.0       |
| Date Created          | - | 2017-12-22 |

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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