

PhytoLab GmbH & Co. KG Dutendorfer Str. 5-7 91487 Vestenbergsgreuth

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Date: 8.04.20

Cust.No: 96888

Certificate of analysis

Report-No.: 104297447-99 002
Batch: 10748
Article: 83798 L-Glutamine

| Test | Unit | Limit | Testresult |
|---|------|----------|--------------------|
| Appearance, SOP 100005 | | powder | Conform |
| Color, SOP 100006 | | white | Conform |
| Solubility, SOP 105001: Water | | soluble | Conform Conform |
| Identification (HPLC-MS/MS), SOP 204120 | | Conform | Conform |
| Identification (IR-spectroscopy, Ph.Eur. 9.0, 2.2.24)/USP 42 NF 37 <197>), SOP 206000 | | Conform | Conform |
| Identification (1H-NMR-spectroscopy), (outsourced), SOP 206010 | | Conform | Conform |
| Identification (13C-NMR-spectroscopy), (outsourced), SOP 206020 | | Conform | Conform |
| Water content, (micro determination, coulometric titration), Ph.Eur. 10.0., 2.5.32, SOP 304291: Mean value | % | | < 0.1 |
| Peakpurity, (HPLC), SOP 401367 | | Conform | Conform |
| L-Glutamine (HPLC), method 1 (% AU), SOP 441516 | % | >= 98.00 | 99.86 |

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| Test | Unit | Limit | Testresult |
|---|------|-------|------------|
| Residual solvents, (headspace-GC), SOP 805765: | | | |
| Residual solvents | % | | < 0.05 |
| Inorganic impurities, (ICP-MS), for reference substances, SOP 811701: | | | |
| Sodium | % | | < 0.1 |
| Potassium | % | | < 0.1 |
| Magnesium | % | | < 0.1 |
| Calcium | % | | < 0.1 |
| Aluminium | % | | < 0.1 |
| Phosphorus | % | | < 0.1 |
| Sulfur | % | | < 1.0 |
| Content*, SOP 890000 | % | | 100 |

Assessment:

The above mentioned reference substance meets the specification.

*The absolute content is calculated considering the chromatographic purity, and if available, the content of water, residual solvents and inorganic impurities according to the following formula:
Content = (100% - water content (%) - residual solvents (%) - inorganic impurities (%)) x chromatographic purity (%) / 100.

The chromatographic purity is checked regularly: the last analysis has been performed in March 2017.

The reference substance cannot be documented with an expiry date. The pack is closed and is recommended to be stored as indicated. The unopened product is guaranteed to fulfill the specifications of this analytical report for a period of 60 months. Once opened we can no longer guarantee the stability of the material.

Vestenbergsreuth, 8.04.20

Dr. Michael Schwarz
Manager Reference Substances

This is a computer print and valid without signature. A signed certificate of analysis can be taken on request.