

## Certificate of Analysis

**Product Name:** L-GLUTAMINE  
*BioUltra*  
**Product Number:** 99980  
**Batch Number:** BCBK3328V  
**Brand:** Fluka  
**CAS Number:** 56-85-9  
**Formula:** C<sub>5</sub>H<sub>10</sub>N<sub>2</sub>O<sub>3</sub>  
**Formula Weight:** 146.14  
**Quality Release Date:** 19 DEC 2012  
**Recommended Retest Date:** NOV 2016

TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	COLORLESS OR WHITE	WHITE
APPEARANCE (FORM)	POWDER	POWDER
TITRATION (NT) HClO <sub>4</sub> 0.1M	99.5 - 100.5 %	99.7 %
THIN LAYER CHROMATOGR.	FOREIGN AMINO ACIDS ≤0.5%	FOREIGN AMINO ACIDS ≤0.5%
SPECIFIC ROTATION (20/D)	33.0 ± 1.0 DEGREES	34.0 DEGREES
CONCENTRATION	C=5 IN HYDROCHLORIC ACID 5M	C=5 IN HYDROCHLORIC ACID 5M
MELTING POINT (DEC.)	187 - 197 C	188 C
LOSS ON DRYING	≤ 0.1 %	<0.05%
SULFATED ASH	≤ 0.1 %	0.05 %
INFRARED SPECTRUM	CONFORMS TO STRUCTURE	CONFORMS
METAL TRACE ANALYSIS (ICP)	CORRESPONDS TO REQUIREMENTS	PASSED
ALUMINIUM (ICP)	≤ 5 MG/KG	< 5 MG/KG
BARIUM (ICP)	≤ 5 MG/KG	< 5 MG/KG
BISMUTH (ICP)	≤ 5 MG/KG	< 5 MG/KG
CALCIUM (ICP)	≤ 10 MG/KG	< 10 MG/KG
CADMIUM (ICP)	≤ 5 MG/KG	< 5 MG/KG
COBALT (ICP)	≤ 5 MG/KG	< 5 MG/KG
CHROMIUM (ICP)	≤ 5 MG/KG	< 5 MG/KG
COPPER (ICP)	≤ 5 MG/KG	< 5 MG/KG
IRON (ICP)	≤ 5 MG/KG	< 5 MG/KG
POTASSIUM (ICP)	≤ 50 MG/KG	< 50 MG/KG
LITHIUM (ICP)	≤ 5 MG/KG	< 5 MG/KG
MAGNESIUM (ICP)	≤ 5 MG/KG	< 5 MG/KG
MANGANESE (ICP)	≤ 5 MG/KG	< 5 MG/KG
MOLYBDENUM (ICP)	≤ 5 MG/KG	< 5 MG/KG

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<b>SODIUM (ICP)</b>	≤ 50 MG/KG	< 50 MG/KG
<b>NICKEL (ICP)</b>	≤ 5 MG/KG	< 5 MG/KG
<b>LEAD (ICP)</b>	≤ 5 MG/KG	< 5 MG/KG
<b>STRONTIUM (ICP)</b>	≤ 5 MG/KG	< 5 MG/KG
<b>ZINC (ICP)</b>	≤ 5 MG/KG	< 5 MG/KG
<b>ARSENIC TRACES (MHS-AAS)</b>	≤ 0.1 MG/KG	< 0.10MG/KG
<b>CHLORIDE (CL)</b>	≤ 50 MG/KG	< 50MG/KG
<b>SULFATE (SO4)</b>	≤ 50 MG/KG	< 50MG/KG
<b>SOLUBILITY (METHOD)</b>	--	0.438 G IN 30 ML H2O (0.1 M)
<b>APPEARANCE (SOLUTION)</b>	CLEAR COLORLESS	CLEAR COLORLESS
<b>PH</b>	5.0 - 6.0	5.4
<b>RESIDUE (FILTER TEST)</b>	NO RESIDUE	NO RESIDUE
<b>UV - ABS. AT 260 NM</b>	≤ 0.01	0.002
<b>UV - ABS. AT 280 NM</b>	≤ 0.01	0.001
<b>CUT-OFF</b>	--	232.9 NM



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Sigma-Aldrich warrants that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.