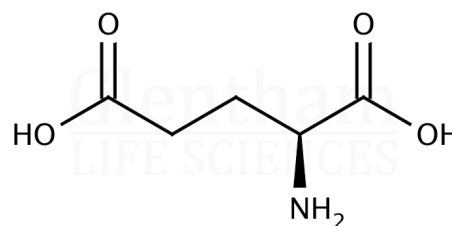


Certificate of Analysis

Product Name	L-Glutamic acid
Glentham Code	GM3277
CAS Number	56-86-0
EINECS	200-293-7
MDL Number	MFCD00002634
PubChem SID	310274214
Batch Number	325AVH

Molecular Weight	147.13
Molecular Formula	C ₅ H ₉ NO ₄
Storage Temp.	+20°C



Property	Specification	Batch 325AVH
Physical Description	White to almost white crystalline powder	White crystalline powder
Identification (IR)	To conform to standard	Conforms
Solubility (10% in 2M HCl)	Clear, colourless solution	Clear, colourless solution
Transmittance	≥ 98.0%	Conforms
Specific Optical Rotation ([α] _D ²⁰)	+31.5 - +32.4 ° (c=10, 2M HCl)	+32.2°
pH	3.0 - 3.5	3.4
Heavy Metals (as Pb)	≤ 10ppm	< 10ppm
Arsenic (As)	≤ 1ppm	< 1ppm
Iron (Fe)	≤ 10ppm	< 10ppm
Ammonium (NH ₄)	≤ 0.02%	< 0.02%
Sulphate (SO ₄)	≤ 0.02%	< 0.02%
Chloride (Cl)	≤ 0.02%	< 0.02%
Other Amino Acids	None detected	Conforms
Any Individual Impurity (TLC)	≤ 0.5%	Conforms
Total Impurities (TLC)	≤ 2.0%	Conforms
Residue on Ignition	≤ 0.1%	< 0.1%
Loss on Drying	≤ 0.1% (105°C, 3h)	< 0.1%
Assay (Titration)	99.0 - 101.0 % (dried basis)	99.9%
Pharmacopoeia Specification(s)	USP, AII	Conforms

Specification Version	v1.2
Manufacture Date	2023-07-12
Re-Test Date	2032-09-29

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 or contact us using the details above for the current version of this document.

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