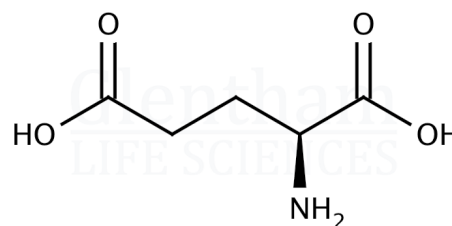


Certificate of Analysis

Product Name	L-Glutamic acid, GlenCell™, suitable for cell culture
Glenthams Code	GM8976
CAS Number	56-86-0
EINECS	200-293-7
MDL Number	MFCD00002634
Batch Number	761NYU

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



Property	Specification	Batch 761NYU
Physical Description	White crystalline powder	Conforms
Identification	To pass tests	Conforms
Solubility (5% in water)	Clear, colourless solution	Conforms
pH (1% in water)	3.0 - 3.5	3.3
Transmittance	≥ 98.0% (5% in water, 430nm, 10mm cell)	Conforms
Specific Optical Rotation ([α] _D 20/D)	+31.5 - +32.2 °	+32.1°
Chloride (Cl)	≤ 0.02%	Conforms
Sulphate (SO ₄)	≤ 0.02%	Conforms
Ammonium (NH ₄)	≤ 0.02%	Conforms
Iron (Fe)	≤ 10ppm	Conforms
Arsenic (As ₂ O ₃)	≤ 1ppm	Conforms
Heavy Metals (as Pb)	≤ 5ppm	Conforms
Any Individual Impurity	≤ 0.2%	0.08% (max.)
Total Impurities	≤ 0.6%	0.08%
Sulphated Ash	≤ 0.1%	0.04%
Loss on Drying	≤ 0.5%	0.04%
Endotoxins	≤ 6EU/g	≤ 6EU/g
Assay	99.0 - 101.0 % (dried basis)	99.6%
Pharmacopoeia Specification(s)	EP	Conforms to EP
Origin	Non-animal origin	Conforms

Specification Version	v1.0
Manufacture Date	2017-03-09
Re-Test Date	2029-12-21

Glenthams Life Sciences confirm that the above referenced product conformed to the information displayed in this document on the quality release date. Please check www.glenthams.com or contact us using the details above for the current version of this document.

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