

## CERTIFICATE OF ANALYSIS

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2015 by Intertek. Certificate Number. 2317548

Catalogue Number	15621
Lot Number	A0469014
Description	L(+)-Glutamic acid,99%
CAS Number	56-86-0
Quality Test/Release Date	17/Jan/2026
Suggested retest date	17/Jan/2028
Country of Origin	CHINA
Declaration of Origin	plant
BSE/TSE	The product is made by fermentation of sugar molasses

Result Name	Units	Specifications	Test Value
Appearance (Color)		White	White
Appearance (Form)		Powder	Powder
Infrared spectrum		Conforms	Conforms
Titration with NaOH	%	98.5 to 100.5 (On dried substance)	99.7 (On dried substance)
Loss on drying	%	=<0.5 (105°C, 3 hrs)	0.06 (105°C, 3 hrs)
Heavy metals (as Pb)	ppm	=<10	=<10
Sulfated ash	%	=<0.1	=<0.02
Other amino acids		not detectable	not detectable
Specific optical rotation		+30.5° to +32.5° (20°C, 589 nm) (on dried substance)	+31.9° (20°C, 589 nm) (on dried substance)
Specific optical rotation		(c=10, 2N HCl)	(c=10, 2N HCl)
Chloride (Cl)	ppm	=<200	=<200
Iron (Fe)	ppm	=<30	=<10
Sulfate (SO4)	ppm	=<300	=<200
Ammonium (NH4)	ppm	=<200	=<200
Arsenic oxide (As2O3)	ppm	=<1	=<1

Geert Torfs  
Supervisor, QC

Products are processed under ISO 9001:2015 quality management systems and samples are tested for conformance to the noted specifications. Certain data may have been supplied by third parties. We disclaim the implied warranties of merchantability and fitness for a particular purpose, and the accuracy of third-party data or information associated with the product. Products are for research and development use only. Products are not for direct administration to humans or animals. It is the responsibility of the final formulator or end user to determine suitability, and to qualify and/or validate each product for its intended use.

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of the catalogue number listed above.