

CERTIFICATE OF ANALYSIS

PRODUCT NAME: L-Serine
 CAS NO.: 56-45-1
 BATCH NO.: 18/MFM/2163
 Molecular Weight: 105.09
 Molecular Formula: C3H7NO3
 Storage Temperature: +20°C
 EXPIRY DATE: 26 October 2021

TESTS	SPECS	RESULTS
Appearance	White crystalline powder	Conforms
Assay	98.5 to 101.5%	99.8%
Specific optical rotation	+14.0 to + 15.6°	+ 15.2°
Identification	IR	Conforms
Residue on ignition	<= 0.1%	0.03%
Ammonium	<= 0.02%	Conforms
Chlorides	<= 0.05%	Conforms
Sulphate	<= 0.03%	Conforms
Iron (Fe)	<= 30 ppm	Conforms
Heavy Metals	<= 15ppm	Conforms
Arsenic	<= 1ppm	Conforms
Loss on Drying	<= 0.2%	0.08%
Organic Impurities	Any individual Impurity: <= 0.5%	Conforms
	Total impurities: <= 2.0%	Conforms
Pharmacopoeia	USP	Conforms to
Specifications		USP35

For and on behalf of
FORMEDIUM Ltd, Unit 1B
 Hunstanton Commercial Park
 PE36 5JQ, England

* This material is supplied for laboratory use only.

[Signature]
 (Authorised Signature)

Supplier: Formedium Ltd

Approved by:

[Signature]

Date: 18 JUL 2018