

**Certificate of Analysis**

Description : Amino Acid Standard (1 nmol/μl) 10/pk

Part.-No. : 5061-3330

Production date : 01 Dec 2017

Lot.-No. : BCBW2416

Expiration date : 01-Dec 2019

No.	Component	Molecular Weight	Final Concentration (mg/ml)
01	L-Alanine	89.10	0.08910
02	L-Arginine	174.20	0.17420
03	L-Aspartic Acid	133.11	0.13311
04	L-Cystine	240.30	0.24030
05	L-Glutamic Acid	147.13	0.14713
06	Glycine	75.07	0.07507
07	L-Histidine Hydrochloride Monohydrate	209.63	0.20963
08	L-Isoleucine	131.18	0.13118
09	L-Leucine	131.18	0.13118
10	L-Lysine Hydrochloride	182.65	0.18265
11	L-Methionine	149.21	0.14921
12	L-Phenylalanine	165.19	0.16519
13	L-Proline	115.13	0.11513
14	L-Serine	105.09	0.10509
15	L-Threonine	119.12	0.11912
16	L-Tyrosine	181.19	0.18119
17	L-Valine	117.15	0.11715

Purity Determination:

Amino acids by Titration, Loss on drying, Residue on ignition, IR-Spectroscopy, MicroSelect-Test, Trace Metal and Trace Anion Determination

Hydrochloric acid by Titration, MicroSelect-Test, Trace Metal and Trace Anion Determination

Raw materials

All raw materials used to prepare this amino acid standard are of the highest available purity (> 99%) and are routinely analyzed according to the above-mentioned purity-determinations.

Manufacturing

We employ precise measuring techniques in manufacturing this amino acid standard. Mass is determined with electronic balances capable of weighing to 0.0001 g and calibrated by the Swiss Office of Weights and Measures. Volume is determined in dedicated high-purity borosilicate volumetric flasks capable of measuring a 2000 ml-volume with an accuracy of 0.3%.

Packaging and Storage

The final solution is handled under argon, filled into 1 ml amber ampoules under inert gas (argon) and sealed. 10 finished ampoules are packaged into a set and stored at 4 °C.

Stability

Every individual lot of the product is subjected to reanalysis and the experience allows to set the shelf life to two years, if the product is stored as received at 4 °C. The guaranteed stability is not applicable to ampoules stored after opening, even if resealed.

Analytical Quality Control

The scope of the analytical testing procedures covers identity, purity, homogeneity, accuracy, function test in amino acid analysis and stability of the finished product

Description	Lot Analysis	Specifications
Aspect	clear, colorless liquid	clear, colorless liquid
Density (20/4)	1.001	1.00 ± 0.01 g/ml
Index of Refraction (20/D)	1.334	1.334 ± 0.005
Amino Acid Analysis :	corresponds	corresponds
- Identity	corresponds	corresponds
- Purity	corresponds	corresponds
- Concentration Accuracy	corresponds	± 2.5% relative to primary standard

Buchs, 01.12.2017

Sigma-Aldrich Production GmbH
Industriestrasse 25
CH-9470 Buchs / Switzerland



.....
Dr. A. Schneider, Analytical Product Manager
Quality Control, Buchs / Switzerland