



## Certificate of Analysis

Description : Amino Acid Standard (0.025 nmol/μl) 10/pk

Part.-No. : 5061-3333

Production date : 04-Apr 2014

Lot.-No. : BCBM9494V (99415)

Expiration date : 04-Apr 2016

No.	Component	Molecular Weight	Final Concentration (mg/ml)
01	L-Alanine	89.10	0.00223
02	L-Arginine	174.20	0.00436
03	L-Aspartic Acid	133.11	0.00333
04	L-Cystine	240.30	0.00601
05	L-Glutamic Acid	147.13	0.00368
06	Glycine	75.07	0.00188
07	L-Histidine Hydrochloride Monohydrate	209.63	0.00524
08	L-Isoleucine	131.18	0.00328
09	L-Leucine	131.18	0.00328
10	L-Lysine Hydrochloride	182.65	0.00457
11	L-Methionine	149.21	0.00373
12	L-Phenylalanine	165.19	0.00413
13	L-Proline	115.13	0.00288
14	L-Serine	105.09	0.00263
15	L-Threonine	119.12	0.00298
16	L-Tyrosine	181.19	0.00453
17	L-Valine	117.15	0.00293

### 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)	1.000	1.00 ± 0.01 g/ml
Index of Refraction (20/D)	1.333	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, 04.04.2014

Sigma-Aldrich Production GmbH  
Industriestrasse 25  
CH-9471 Buchs / Switzerland



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