



## Certificate of Analysis

Description : Amino Acid Standard (0.25 nmol/ $\mu$ l) 10/pk

Part.-No. : 5061-3331

Production date : 01 May 2014

Lot.-No. : BCBN0825V (99413)

Expiration date. : 01 May 2016

No.	Component	Molecular Weight	Final Concentration (mg/ml)
01	L-Alanine	89.10	0.02228
02	L-Arginine	174.20	0.04355
03	L-Aspartic Acid	133.11	0.03328
04	L-Cystine	240.30	0.06008
05	L-Glutamic Acid	147.13	0.03678
06	Glycine	75.07	0.01877
07	L-Histidine Hydrochloride Monohydrate	209.63	0.05241
08	L-Isoleucine	131.18	0.03279
09	L-Leucine	131.18	0.03279
10	L-Lysine Hydrochloride	182.65	0.04566
11	L-Methionine	149.21	0.03730
12	L-Phenylalanine	165.19	0.04130
13	L-Proline	115.13	0.02878
14	L-Serine	105.09	0.02627
15	L-Threonine	119.12	0.02978
16	L-Tyrosine	181.19	0.04530
17	L-Valine	117.15	0.02929

### 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

<b>Description</b>	<b>Lot Analysis</b>	<b>Specifications</b>
Aspect	clear, colorless liquid	clear, colorless liquid
Density (20/4)	1.000	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, 01.05.2014

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