

## CERTIFICATE OF ANALYSIS

Product : **L-TRYPTOPHAN**  
 Product number : T0720  
 Batch number : 012140  
 Date of analysis : 15-04-2016  
 Expiry date : 30-04-2021  
 Packaging and storage : store protected from light

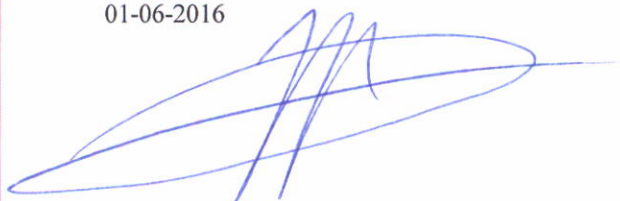
| Description                             | SPECIFICATION                            | RESULT   | UNITS | REMARKS                |
|-----------------------------------------|------------------------------------------|----------|-------|------------------------|
| Identification                          | white to almost white crystalline powder | complies |       |                        |
| Appearance of solution                  | conform                                  | complies |       | 1% in 1M HCl           |
| Specific optical rotation               | -33.0 – -30.0                            | -31.13   | °     | 1% in H <sub>2</sub> O |
| Ninhydrin-positive substances           | conform                                  | 0.03     | %     | HPLC                   |
| Impurity A and other related substances | conform                                  | conform  |       | HPLC                   |
| pH                                      | 5.5 – 7.0                                | 5.80     |       | 1% in H <sub>2</sub> O |
| Chlorides                               | ≤ 200                                    | < 200    | ppm   |                        |
| Sulphates                               | ≤ 300                                    | < 300    | ppm   |                        |
| Ammonium                                | ≤ 200                                    | < 200    | ppm   |                        |
| Iron                                    | ≤ 20                                     | < 20     | ppm   |                        |
| Heavy metals                            | ≤ 10                                     | < 10     | ppm   |                        |
| Loss on drying                          | ≤ 0.3                                    | 0.0      | %     | 105 °C                 |
| Sulphated ash                           | ≤ 0.1                                    | 0.05     | %     |                        |
| Assay                                   | 98.5 – 101.0                             | 99.67    | %     | dried substance        |

This certificate of analysis is conform the results of the manufacturer.

Conclusion: approved  
 Released by:

drs. M. van Wissen, pharmacist  
 Department of Quality Control Duchefa B.V.

01-06-2016



The buyer is responsible to test each batch to ensure the product is suitable for their specific purpose.