## **Chem-Impex International, Inc.**

Tel: (630) 766-2112 E-mail: sales@chemimpex.com Shipping and Correspondence: 935 Dillon Drive Wood Dale, IL 60191 Fax: (630) 766-2218 Web site: www.chemimpex.com Manufacturing site: 825 Dillon Drive Wood Dale, IL 60191

## Certificate of Analysis

| Catalogue Number               | 01351   |
|--------------------------------|---|
| Product                        | Boc-L-glutamic acid γ <i>-tert</i> -butyl ester   |
|                                |   |
| Lot Number                     | 000424-180611-30605                               |
|                                | Boc-L-Glu(OtBu)-OH                                |
| CAS Number                     | 13726-84-6  |
| Molecular Formula              | C <sub>14</sub> H <sub>25</sub> NO <sub>6</sub>   |
| <br>Molecular Weight           | 303.4   |
| Appearance                     | White powder                                      |
| Solubility                     | Clear solution (0.3g in 2ml DMF)                  |
| Melting Point                  | 112.3 - 113.0 °C                                  |
| Elemental Analysis<br>(Theory) | < 5% (C, H, N)                                    |
| Water Content (Karl<br>Fisher) | 0.19%   |
| <b>Optical Rotation</b>        | $[a]^{20}_{D} = -9.7 \circ (C=2 \text{ in MeOH})$ |
| Infrared Spectrum              | Conforms to structure                             |
| Analysis by Mass Spectra       | Conforms to standard                              |
| Loss on Drying                 | 0.10% (40 °C, 2h)                                 |
| <sup>1</sup> H NMR             | Conforms to structure                             |
| Chiral HPLC                    | 99.92% (ee)                                       |
| <b>D-Enantiomer</b>            | 0.0728%   |
| Purity by HPLC                 | 99.45%  |
| Purity by TLC                  | >98%  |
| Storage                        | Store at 0-8°C                                    |
|                                |   |

## Certificate of Analysis

Catalog Number: 01351

Lot Number: 000424-180611-30605

Remarks

See material safety data sheet for additional information

For laboratory use only

The foregoing is a copy of the Certificate of Analysis as provided by our supplier

likumer.

Bala Kumar Quality Control Manager