

# *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*

<b>Catalogue Number</b>	03502
<b>Product</b>	<b>Fmoc-L-citrulline</b>
<b>Lot Number</b>	000424-210916-21602 Fmoc-L-Cit-OH
<b>CAS Number</b>	133174-15-9
<b>Molecular Formula</b>	C <sub>21</sub> H <sub>23</sub> N <sub>3</sub> O <sub>5</sub>
<b>Molecular Weight</b>	397.4

---

<b>Appearance</b>	White powder
<b>Solubility</b>	Clear solution (0.3 g in 2 mL DMF)
<b>Melting Point</b>	157.1 - 159.2 °C
<b>Elemental Analysis (Found)</b>	< 5% (C, H, N)
<b>Water Content (Karl Fisher)</b>	0.17%
<b>Optical Rotation</b>	[α] <sub>D</sub> <sup>20</sup> = -9.5 ° (C=1 in DMF)
<b>Infrared Spectrum</b>	Conforms to structure
<b>Analysis by Mass Spectra</b>	Conforms to standard
<b>Loss on Drying</b>	0.17% (70 °C, 2h)
<b><sup>1</sup>H NMR</b>	Conforms to structure
<b>Chiral HPLC</b>	99.93% (ee)
<b>D-Enantiomer</b>	0.07%
<b>Purity by HPLC</b>	99.06%
<b>Purity by TLC</b>	> 98%
<b>Storage</b>	Store at 0 - 8 °C

# *Certificate of Analysis*

Catalog Number: 03502

Lot Number: 000424-210916-21602

---

**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**



**Bala Kumar**  
**Quality Control Manager**