

# Chem-Impex International, Inc.

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825 Dillon Drive

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## Certificate of Analysis

<b>Catalogue Number</b>	21933
<b>Lot Number</b>	00152-140219
<b>Product</b>	<b>D-(+)-Malic acid</b>  (R)-(+)-2-Hydroxysuccinic acid  (R)-2-Hydroxybutanedicarboxylic acid
<b>CAS Number</b>	636-61-3
<b>Molecular Formula</b>	C <sub>4</sub> H <sub>6</sub> O <sub>5</sub>
<b>Molecular Weight</b>	134.09

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<b>Appearance</b>	White crystals or crystalline powder
<b>Heavy Metals</b>	< 20 ppm
<b>Arsenic (As<sub>2</sub>O<sub>2</sub>)</b>	< 2 ppm
<b>Anion</b>	Chloride (Cl <sup>-</sup> ): < 0.01% Sulfate (SO <sub>4</sub> <sup>2-</sup> ): < 0.04%
<b>Optical Rotation</b>	[α] <sub>D</sub> <sup>20</sup> = +1.7°
<b>Related Substances</b>	Fumaric Acid: 0.15% Maleic Acid: 0.010%
<b>Residue On Ignition</b>	0.05%
<b>Purity by HPLC</b>	99.2%
<b>Chiral Purity</b>	99.5%
<b>Storage</b>	Store at 0-8 °C

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**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**