



MP Biomedicals, LLC

29525 Fountain Parkway  
Solon, Ohio 44139

Telephone: 440/337-1200  
Toll Free: 800/854-0530

Fax: 440/337-1180  
web: www.mpbio.com

## Certificate of Analysis

**Product:** DL-Valine  
**Catalog No.:** 103229  
**Formula:** C<sub>5</sub>H<sub>11</sub>NO<sub>2</sub>  
**Purity:** 100%  
**Physical Description:** White Crystalline Powder

**Lot No.:** 71438  
**Formula Weight:** 117.1  
**Storage:** Room Temperature

Identity Test  
FTIR

### Analysis

Passes  
Conforms to Standard

### Additional Testing for Information Only

Optical Rotation	+1.3° ± 0.5 (c = 3, 1N HCl)
Melting Point	295-297°C
Loss on Drying	0.06%
Residue on Ignition	0.02%
Chloride (Cl)	Less than 200 ppm
Sulfate (SO <sub>4</sub> )	Less than 500 ppm
Ammonium (NH <sub>4</sub> )	Less than 200 ppm
Arsenic (As)	Less than 1 ppm
Heavy Metals (Pb)	Less than 10 ppm
Iron (Fe)	Less than 10 ppm

TLC (USP method): Conforms to USP

Solubility: A 50 mg/ml solution in water is clear and colorless

Note: This certificate of analysis was updated on Feb. 28, 2003 to reflect the additional testing completed of TLC and solubility.

08/16/2002 - Joseph Dietz, Ph.D.

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Technical Director