

## CERTIFICATE OF ANALYSIS

PRODUCT NAME: L-Alanine,99%

ITEM NUMBER: A108263  
BRAND: Aladdin  
CAS NUMBER: 56-41-7  
MDL NUMBER: MFCD00064410  
FORMULA: C<sub>3</sub>H<sub>7</sub>NO<sub>2</sub>  
MOLECULAR WEIGHT: 89.09

| TEST   | SPECIFICATION              |        | TARGET VALUE |
|--|----------------------------|--------|--------------|
|  | MIN.                       | MAX.   |              |
| Appearance   | white powder and/or chunks |        |              |
| Arsenic  | 0 ppm                      | 3 ppm  | 3 ppm        |
| Cadmium (Cd)   | 0 ppm                      | 1 ppm  | 1 ppm        |
| Carbon   | 40 %                       | 41 %   | 41 %         |
| Infrared spectrum  | Conforms to Structure      |        |              |
| Lead   | 0 ppm                      | 10 ppm | 10 ppm       |
| Mercury (Hg)   | 0 ppm                      | 1 ppm  | 1 ppm        |
| Nitrogen   | 15.2 %                     | 16.2 % | 16.2 %       |
| Purity(Nonaqueous tieration)(after drying)                               | 99 %                       | 101 %  | 101 %        |
| Solubility in Water  | almost transparency        |        |              |
| Specific rotation [ $\alpha$ ] <sub>20/D</sub> (C=10, HCl)(after drying) | ++13.2 °                   | +1+ °  | ++15 °       |