

ALADDIN SCIENTIFIC CORPORATION

14078 Meridian Parkway, Riverside, CA. 92518

Certificate of Analysis

| | |
|--------------------------|--|
| Date of Testing: | 2022-11-07 11:29:21 |
| Date of Next Testing: | 2026-11-06 11:29:21 |
| Product Name: | Tris(hydroxymethyl)aminomethane hydrochloride |
| CAS Number: | 1185-53-1 |
| Specifications & Purity: | Ultra pure, ≥99% |
| Lot #: | K2202733 |
| SKU # | T105289 |
| Analysis: | 140484 |
| Storage Temperature: | Room temperature |

| Parameter | Limit Values | Result |
|--|-------------------------|--------------------------|
| Lead(Pb) | 0-0.0005 (%) | 0.00 % |
| UV Absorbance 260nm(at 1M in H2O) | 0-0.06 | 0.03 |
| Cobalt(Co) | 0-0.0005 (%) | 0.00 % |
| Purity (Titration by NaOH) | 99-101 (%) | 99.88 % |
| Sulfate(SO42-) | 0-0.005 (%) | 0.00 % |
| Ignition Residue (as sulfate) | 0-0.2 (%) | 0.18 % |
| Carbon by Elemental Analysis | 29.55%-31.38% | 30.52 % |
| UV Absorbance 280nm(at 1M in H2O) | 0-0.06 | 0.02 |
| Strontium(Sr) | 0-0.0005 (%) | 0.00 % |
| Zinc(Zn) | 0-0.0005 (%) | 0.00 % |
| Cadmium(Cd) | 0-0.0005 (%) | 0.00 % |
| Barium(Ba) | 0-0.0005 (%) | 0.00 % |
| Nitrogen by Elemental Analysis | 8.6-9.1 (%) | 8.81 % |
| Bismuth(Bi) | 0-0.0005 (%) | 0.00 % |
| Loss on drying | 0-0.2 (%) | 0.14 % |
| Aluminum(Al) | 0-0.0005 (%) | 0.00 % |
| UV Absorbance 290nm(40%,H2O) | 0-0.05 | 0.01 |
| Copper(Cu) | 0-0.0005 (%) | 0.00 % |
| Oxygen by Elemental Analysis | 30-30.7 (%) | 30.40 % |
| Appearance (T105289) | White powder or crystal | White Powder or Crystals |
| Infrared spectrum | Conforms to Structure | Conforms to Structure |
| Insoluble matter | pass | Pass |
| Proton NMR spectrum | Conforms to Structure | Conforms to Structure |
| Solubility in H2O , Colorless and clear(0.5M,20°C) | pass | Pass |



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A handwritten signature in black ink that reads "John Su". The signature is written in a cursive, flowing style.

John Su
QA & QC Manager