

Certificate of Analysis

1 Reagent Lane
 Fair Lawn, NJ 07410
 201.796.7100 tel
 201.796.1329 fax

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System
 Standard ISO9001:2015 by SAI Global Certificate Number CERT – 0120632

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Products are for research use or further manufacturing. Not for direct administration to humans or animals. It is the responsibility of the final formulator and end user to determine suitability based upon the intended use of the end product. Products are tested to meet the analytical requirements of the noted grade. The following information is the actual analytical results obtained.

| | | | |
|-------------------|--|-----------------------------|------------|
| Catalog Number | A144 | Quality Test / Release Date | 05/09/2022 |
| Lot Number | 221612 | | |
| Description | HYDROCHLORIC ACID, CERTIFIED A.C.S. PLUS | | |
| Country of Origin | Canada | Suggested Retest Date | May/2027 |
| Chemical Origin | Inorganic-non animal | | |
| BSE/TSE Comment | No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product. | | |
| Comment | No Bisphenol-A or any other organic compound is used in the manufacture of this product. No melamine is used in the production or packaging of this product. It is not manufactured using genetically modified organisms or genetically engineered additives or raw materials. | | |

| N/A | | | |
|--------------------------------|-----------|-------------------------------|--|
| Result Name | Units | Specifications | Test Value |
| APPEARANCE | | REPORT | Clear colorless liquid free of suspended matter. |
| ALUMINUM | ppm | <= 0.3 | <0.3 |
| AMMONIUM (NH4) | ppm | <= 3 | <3 |
| ARSENIC AND ANTIMONY | ppm | <= 0.005 | <0.005 |
| ASSAY | w/w % | Inclusive Between 36.5 - 38.0 | 37.1 |
| BORON (B) | ppm | <= 0.1 | <0.1 |
| BROMIDE | % | <= 0.005 | <0.005 |
| CALCIUM (Ca) | ppm | <= 0.3 | <0.3 |
| CHROMIUM (Cr) | ppm | <= 0.2 | <0.2 |
| COLOR | APHA | <= 10 | <10 |
| COPPER (Cu) | ppm | <= 0.1 | <0.1 |
| EXTRACTABLE ORGANIC SUBSTANCES | ppm | <= 5 | <5 |
| FREE CHLORINE | ppm | <= 0.4 | <0.4 |
| GOLD (Au) | ppm | <= 0.3 | <0.3 |
| HEAVY METALS (as Pb) | ppm | <= 0.1 | <0.1 |
| IDENTIFICATION | PASS/FAIL | = PASS TEST | PASS TEST |
| IRON (Fe) | ppm | <= 0.1 | <0.1 |
| LEAD (Pb) | ppm | <= 0.1 | <0.1 |
| MAGNESIUM (Mg) | ppm | <= 0.3 | <0.3 |
| MANGANESE (Mn) | ppm | <= 0.3 | <0.3 |
| MERCURY (Hg) | ppb | <= 5 | <5 |

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above.
 If there are any questions with this certificate, please call at (800) 227-6701.

*Based on suggested storage condition.

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| | | | |
|------------------------|-----|---------|-------|
| NICKEL (Ni) | ppm | <= 0.1 | <0.1 |
| PHOSPHATE (PO4) | ppm | <= 0.05 | <0.05 |
| POTASSIUM (K) | ppm | <= 0.3 | <0.3 |
| RESIDUE AFTER IGNITION | ppm | <= 4 | <4 |
| SODIUM (Na) | ppm | <= 0.3 | <0.3 |
| SULFATE (SO4) | ppm | <= 0.5 | <0.5 |
| SULFITE | ppm | <= 0.8 | <0.8 |
| TIN (Sn) | ppm | <= 0.3 | <0.3 |
| TITANIUM (Ti) | ppm | <= 0.3 | <0.3 |
| ZINC (Zn) | ppm | <= 0.3 | <0.3 |



Ira Marootian - Quality Control Manager - Bridgewater

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