

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 – 0120633

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 | A491 | Quality Test / Release Date | 02/01/2023 |
| Lot Number | 226256 | | |
| Description | ACETIC ACID, GLACIAL, USP/FCC/EP/BP | | |
| Country of Origin | Canada | Suggested Retest Date | Jan/2026 |
| Chemical Origin | Synthetic | | |
| BSE/TSE Comment | This chemical is manufactured from raw materials that do not contain animal parts, products, and/or by-products, nor do they come into contact with animal parts, products, and/or by-products. | | |

| British Pharmacopeia Grade | | | |
|-----------------------------|--------------------|--------------------------------|-------------------------|
| Result Name | Units | Specifications | Test Value |
| APPEARANCE | | REPORT | Clear, colorless liquid |
| APPEARANCE OF SOLUTION | | = CLEAR AND COLORLESS | CLEAR AND COLORLESS |
| ASSAY | % | Inclusive Between 99.0 - 100.5 | 99.9 |
| CHLORIDES | ppm | <= 25 | <25 |
| FREEZING POINT | DEGREES CELSIUS | >= 14.8 | 16.3 |
| HEAVY METALS | ppm | <= 5 | <5 |
| IDENTIFICATION (ALL LISTED) | PASS/FAIL | = PASS TEST | PASS TEST |
| IRON | ppm | <= 5 | <5 |
| REDUCING SUBSTANCES | PASS/FAIL | = PASS TEST | PASS TEST |
| RESIDUAL SOLVENTS | Meets requirements | = MEETS REQUIREMENTS | MEETS REQUIREMENTS |
| RESIDUE ON EVAPORATION | % | <= 0.01 | <0.01 |
| SULFATES | ppm | <= 50 | <50 |

| EP Grade | | | |
|-----------------------------|-----------------|--------------------------------|-------------------------|
| Result Name | Units | Specifications | Test Value |
| APPEARANCE | | REPORT | Clear, colorless liquid |
| APPEARANCE OF SOLUTION | | = CLEAR AND COLORLESS | CLEAR AND COLORLESS |
| ASSAY | % | Inclusive Between 99.0 - 100.5 | 99.9 |
| CHLORIDES | ppm | <= 25 | <25 |
| FREEZING POINT | DEGREES CELSIUS | >= 14.8 | 16.3 |
| HEAVY METALS | ppm | <= 5 | <5 |
| IDENTIFICATION (ALL LISTED) | PASS/FAIL | = PASS TEST | PASS TEST |
| IRON | ppm | <= 5 | <5 |
| REDUCING SUBSTANCES | PASS/FAIL | = PASS TEST | PASS TEST |

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.

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 – 0120633

| | | | |
|---------------------|--------------------|----------------------|--------------------|
| RESIDUAL SOLVENTS | Meets requirements | = MEETS REQUIREMENTS | MEETS REQUIREMENTS |
| RESIDUE EVAPORATION | % | <= 0.01 | <0.01 |
| SULFATES | ppm | <= 50 | <50 |

| FCC Grade | | | |
|-------------------------------|-----------------|--------------------------------|-------------------------|
| Result Name | Units | Specifications | Test Value |
| APPEARANCE | | REPORT | Clear, colorless liquid |
| ASSAY | % | Inclusive Between 99.5 - 100.5 | 99.9 |
| IDENTIFICATION (ALL LISTED) | PASS/FAIL | = PASS TEST | PASS TEST |
| LEAD (Pb) | MG/KG | <= 0.5 | <0.5 |
| NON-VOLATILE RESIDUE | % | <= 0.005 | <0.005 |
| READILY OXIDIZABLE SUBSTANCES | PASS/FAIL | = PASS TEST | PASS TEST |
| SOLIDIFICATION POINT | DEGREES CELSIUS | >= 15.6 | 16.3 |

| USP Grade | | | |
|-------------------------------|--------------------|--------------------------------|-------------------------|
| Result Name | Units | Specifications | Test Value |
| APPEARANCE | | REPORT | Clear, colorless liquid |
| ASSAY | % | Inclusive Between 99.5 - 100.5 | 99.9 |
| CHLORIDE | PASS/FAIL | = PASS TEST | PASS TEST |
| CONGEALING TEMPERATURE | DEGREES CELSIUS | >= 15.6 | 16.3 |
| HEAVY METALS (as Pb) | ppm | <= 5 | <5 |
| IDENTIFICATION (ALL LISTED) | PASS/FAIL | = PASS TEST | PASS TEST |
| NON-VOLATILE RESIDUE | % | <= 0.005 | <0.005 |
| READILY OXIDIZABLE SUBSTANCES | PASS/FAIL | = PASS TEST | PASS TEST |
| RESIDUAL SOLVENTS | Meets requirements | = MEETS REQUIREMENTS | MEETS REQUIREMENTS |
| SULFATE (SO4) | PASS/FAIL | = PASS TEST | PASS TEST |

| | |
|-------------------|--|
| Residual Solvents | Only Class 3 Solvents are likely to be present. The Class 3 solvents that may be present are Formic Acid and Methyl Acetate, both at a level of < 5 ppm. |
|-------------------|--|

Chetan Dudhatra

Chetan Dudhatra - Quality Control Supervisor - Bridgewater

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.