

## CERTIFICATE OF ANALYSIS

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2015 by Intertek Global  
 Certificate Number: CERT-0120633

|                           |   |
|---------------------------|---|
| Catalogue Number          | A383  |
| Lot Number                | 253041  |
| Description               | 1-BUTANOL, HPLC GRADE   |
| CAS Number                | 71-36-3   |
| Quality Test/Release Date | 21/Jul/2025   |
| Suggested retest date     | 20/Jul/2030   |
| Country of Origin         | United States   |
| Declaration of Origin     | Organic - non animal  |
| BSE/TSE                   | 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. |

| Result Name                            | Units            | Specifications                    | Test Value                                       |
|--|------------------|-----------------------------------|--|
| APPEARANCE                             |                  | REPORT                            | Clear, colorless liquid free of suspended matter |
| ASSAY                                  | %                | >= 99.4                           | 99.96  |
| BOILING POINT                          | DEGREES CELSIUS  | Inclusive Between 117.6 - 117.8   | 117.8  |
| BOILING POINT (INITIAL)                | DEGREES CELSIUS  | Inclusive Between 116.2 - 119.2   | 117.6  |
| BOILING RANGE                          | DEGREES CELSIUS  | <= 1.5                            | 0.2  |
| BOILING RANGE (DRY POINT)              | DEGREES CELSIUS  | Inclusive Between 116.2 - 119.2   | 117.8  |
| BUTYL ETHER                            | %                | <= 0.2                            | 0.01   |
| CARBONYL COMPOUNDS                     | %                | <= 0.01                           | <0.01  |
| COLOR                                  | APHA             | <= 10                             | 5  |
| EVAPORATION RESIDUE                    | %                | <= 0.005                          | <0.00005   |
| FLUORESCENCE BACKGROUND IDENTIFICATION | PASS/FAIL        | = PASS TEST                       | PASS TEST  |
| OPTICAL ABS AT 215 NM                  | ABSORBANCE UNITS | <= 1.00                           | 0.36   |
| OPTICAL ABS AT 220 NM                  | ABSORBANCE UNITS | <= 0.50                           | 0.24   |
| OPTICAL ABS AT 230 NM                  | ABSORBANCE UNITS | <= 0.20                           | 0.10   |
| OPTICAL ABS AT 254 NM                  | ABSORBANCE UNITS | <= 0.025                          | 0.014  |
| REFRACTIVE INDEX @ 25 DEG C            |                  | Inclusive Between 1.3952 - 1.3992 | 1.3973   |
| TITRATABLE ACID                        | MEQ/G            | <= 0.0008                         | 0.00004  |
| WATER (H2O)                            | %                | <= 0.1                            | 0.007  |

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of the catalogue number listed above.



Matthew Micek  
QC Supervisor

Products are processed under ISO 9001:2015 quality management systems and samples are tested for conformance to the noted specifications. Certain data may have been supplied by third parties. We disclaim the implied warranties of merchantability and fitness for a particular purpose, and the accuracy of third-party data or information associated with the product. Products are for research use or further manufacturing. Products are not for direct administration to humans or animals. It is the responsibility of the final formulator or end user to determine suitability, and to qualify and/or validate each product for its intended use.

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