

## Certificate of Analysis

|                          |                          |
|--------------------------|--------------------------|
| Date of Testing:         | 2023-07-20 15:53:12      |
| Date of Next Testing:    | 2027-07-19 15:53:12      |
| Product Name:            | <b>1-Butanol</b>         |
| CAS Number:              | 71-36-3                  |
| Specifications & Purity: | Guaranteed Reagent       |
| Lot #:                   | G2313336                 |
| SKU #                    | <b>B400251</b>           |
| Version                  | <b>1</b>                 |
| Analysis #:              | <b>239232</b>            |
| Storage Temperature:     | Argon charged,Desiccated |

| Parameter  | Limit Values       | Result           |
|--|--------------------|------------------|
| Assay (C <sub>4</sub> H <sub>10</sub> O)                     | 99.8-100 (%)       | 99.82300 %       |
| Density (20°C)   | 0.808-0.811 (g/ml) | 0.81 g/ml        |
| Evaporation Residue  | 0-0.001 (%)        | 0.00 %           |
| Acidity(as H <sup>+</sup> )                                  | ≤0.0005 (mmol/g)   | 0.00000 %        |
| Esters(As CH <sub>3</sub> COOC <sub>4</sub> H <sub>9</sub> ) | ≤0.1 (%)           | 0.00000 %        |
| Iron(Fe)   | 0-0.00005 (%)      | 0.00 %           |
| Refractive index n <sub>20</sub> /D                          | 1.3980 - 1.4000    | 1.40             |
| Chloride (Cl <sup>-</sup> )                                  | 0-0.35 (%)         | 0.00 %           |
| Sulfate(SO <sub>4</sub> <sup>2-</sup> )                      | 0-0.04 (%)         | 0.00 %           |
| Ignition Residue (as sulfate)                                | 0-0.1 (%)          | 0.00 %           |
| pH(50g/L solution , 25°C)                                    | 4.0-7.0            | 6.13000          |
| Color test (APHA)  | 0-10               | 0.00             |
| Water by Karl Fischer  | 0-0.1 (%)          | 0.03 %           |
| Carbonyl compounds (As CO)                                   | ≤0.02 (%)          | 0.01000 %        |
| Unsaturated compounds(Br)                                    | ≤0.005 (%)         | 0.00000 %        |
| Salicylic acid(HOC <sub>6</sub> H <sub>4</sub> (OOH)         | 0-0.1 (%)          | 0.00 %           |
| Appearance (B400251)   | Colorless Liquid   | Colorless liquid |
| Readily carbonizable substance                               | pass               | Pass             |



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A handwritten signature in black ink that reads "John Su".

John Su  
QA & QC Manager