

## Certificate of Analysis

Date of Testing: 2023-11-15 16:17:56  
 Date of Next Testing: 2027-11-14 16:17:56  
 Product Name: **1-Butanol**  
 CAS Number: 71-36-3  
 Specifications & Purity: Guaranteed Reagent  
 Lot #: K2314050  
 SKU #: **B400251**  
 Version: **1**  
 Analysis #: **239232**  
 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



ALADDIN SCIENTIFIC CORPORATION

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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