

## Certificate of Analysis

Date of Testing: 2022-12-28 13:56:51  
Date of Next Testing: 2026-12-27 13:56:51  
Product Name: **1-Chlorobutane**  
CAS Number: 109-69-3  
Specifications & Purity: for HPLC,  $\geq 99.5\%$   
Lot #: L2215026  
SKU #: **C103252**  
**Analysis:** **162111**  
Storage Temperature: Room temperature

Parameter	Limit Values	Result
Alkalinity (as NH <sub>3</sub> )	0-0.0002 (%)	0.00 %
free acid (as HCl)	0-0.001 (%)	0.00 %
UV Absorbance 240nm	0-0.02	0.01
Purity(GC)	99.5-100 (%)	99.94 %
UV Absorbance 230nm	0-0.2	0.14
UV Absorbance 250nm	0-0.01	0.00
Evaporation Residue	0-0.001 (%)	0.00 %
Refractive index n <sub>20</sub> /D	1.401-1.403	1.40
Water by Karl Fischer	0-0.01 (%)	0.00 %
Appearance (C103252)	Colorless liquid	Colorless liquid
Infrared spectrum	Conforms to Structure	Conforms to Structure
$\lambda$ , H <sub>2</sub> O reference	Pass	Pass



John Su  
QA & QC Manager