

Certificate of Analysis

Product Name:

Triethanolamine – BioUltra, ≥99.5% (GC)

Product Number: 90278
Batch Number: BCCG2315
Brand: SIGMA
CAS Number: 102-71-6
Formula: C₆H₁₅NO₃
Formula Weight: 149,19 g/mol
Quality Release Date: 13 AUG 2021
Recommended Retest Date: DEC 2024

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid or Viscous Liquid	Viscous Liquid
Purity (GC)	≥ 99.5 %	99.5 %
GC Minor Component 1 Ethanolamine	≤ 0.1 %	< 0.1 %
GC Minor Component 2 Diethanolamine	≤ 0.3 %	< 0.1 %
Refractive index at 20 °C	1.484 - 1.486	1.485
Water	≤ 0.2 %	0.2 %
Residue on Ignition	≤ 0.1 %	< 0.1 %
¹ H NMR Spectrum	Conforms to Structure	Conforms
Metal Trace Analysis (ICP)	Corresponds to Requirements	Pass
Aluminum (Al)	≤ 2 mg/kg	< 2 mg/kg
Barium (Ba)	≤ 1 mg/kg	< 1 mg/kg
Bismuth (Bi)	≤ 2 mg/kg	< 2 mg/kg
Calcium (Ca)	≤ 5 mg/kg	< 5 mg/kg
Cadmium (Cd)	≤ 1 mg/kg	< 1 mg/kg
Cobalt (Co)	≤ 1 mg/kg	< 1 mg/kg
Chromium (Cr)	≤ 1 mg/kg	< 1 mg/kg
Copper (Cu)	≤ 1 mg/kg	< 1 mg/kg
Iron (Fe)	≤ 1 mg/kg	< 1 mg/kg
Potassium (K)	≤ 20 mg/kg	< 20 mg/kg
Lithium (Li)	≤ 1 mg/kg	< 1 mg/kg

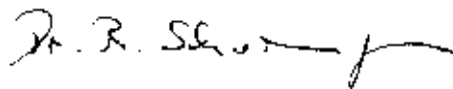
Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.



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Magnesium (Mg)	≤ 1 mg/kg	< 1 mg/kg
Manganese (Mn)	≤ 1 mg/kg	< 1 mg/kg
Molybdenum (Mo)	≤ 1 mg/kg	< 1 mg/kg
Sodium (Na)	≤ 20 mg/kg	< 20 mg/kg
Nickel (Ni)	≤ 1 mg/kg	< 1 mg/kg
Lead (Pb)	≤ 1 mg/kg	< 1 mg/kg
Strontium (Sr)	≤ 1 mg/kg	< 1 mg/kg
Zinc (Zn)	≤ 1 mg/kg	< 1 mg/kg
Arsenic (As)	≤ 0.1 mg/kg	< 0.1 mg/kg
(MHS-AAS)		
Total Sulfur	≤ 20 mg/kg	< 20 mg/kg
as SO ₄ (ICP)		
Chloride (Cl)	≤ 1 mg/kg	1 mg/kg
Appearance of solution	Corresponds to Requirements	Corresponds
(Clear Colorless) 4.476 g in 30 ml H ₂ O		
(1 mol/l)		
PH of Solution (PH)	10.5 - 11.5	11.0
4.476 g in 30 ml H ₂ O (1 mol/l)		
Filtered	No Residue	No Residue
(No Residue on Filter Test)		
UV Absorbance 260nm	1.0 - 2.5	2.0
UV Absorbance 280nm	≤ 0.10	0.04
Cut-off	200.0 - 271.0 nm	265.0 nm



Dr. Reinhold Schwenninger
Quality Assurance
Buchs, Switzerland CH

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