

Certificate of Analysis

Barium ICP-MS Standard, 1000 ppm Ba in 3% HNO₃

Lot Number: 4304G66

Product Number: MSBA1KN

Manufacture Date: APR 11, 2023

Expiration Date: OCT 2024

The certified value for this product is confirmed in independent testing by a second qualified chemist.

The final solution concentration is confirmed by AA, ICP, or ICP-MS, and is traceable to NIST Standard Reference Material 3104. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Water	7732-18-5	
Nitric Acid	7697-37-2	
Barium Nitrate	10022-31-8	

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Assay (vs. EDTA/Metalphthalein)	997-1003 ppm Ba	1000 ppm Ba	915

I=Spectral Interference N=Not Tested

Trace Elements by ICP or ICP - MS

All values reported in mg/L (ppm)

Aluminum (Al)	0.035 ppm	Lutetium (Lu)	0.002 ppm	Terbium (Tb)	0.003 ppm
Antimony (Sb)	0.283 ppm	Magnesium (Mg)	< 0.0007 ppm	Thallium (Tl)	I
Arsenic (As)	0.056 ppm	Manganese (Mn)	< 0.00002 ppm	Thorium (Th)	0.010 ppm
Beryllium (Be)	0.009 ppm	Mercury (Hg)	< 0.03 ppm	Thulium (Tm)	0.003 ppm
Bismuth (Bi)	0.033 ppm	Molybdenum (Mo)	0.108 ppm	Tin (Sn)	I
Boron (B)	I	Neodymium (Nd)	0.012 ppm	Titanium (Ti)	0.018 ppm
Cadmium (Cd)	0.002 ppm	Nickel (Ni)	0.010 ppm	Tungsten (W)	0.143 ppm
Calcium (Ca)	I	Niobium (Nb)	0.024 ppm	Uranium (U)	0.002 ppm
Cerium (Ce)	0.006 ppm	Osmium (Os)	0.004 ppm	Vanadium (V)	0.008 ppm
Cesium (Cs)	0.059 ppm	Palladium (Pd)	0.118 ppm	Ytterbium (Yb)	0.003 ppm
Chromium (Cr)	0.039 ppm	Phosphorus (P)	I	Yttrium (Y)	0.013 ppm
Cobalt (Co)	0.002 ppm	Platinum (Pt)	0.004 ppm	Zinc (Zn)	N
Copper (Cu)	N	Potassium (K)	< 0.00002 ppm	Zirconium (Zr)	0.465 ppm
Dysprosium (Dy)	0.003 ppm	Praseodymium (Pr)	0.003 ppm		
Erbium (Er)	0.002 ppm	Rhenium (Re)	< 0.00003 ppm		
Europium (Eu)	0.643 ppm	Rhodium (Rh)	0.001 ppm		
Gadolinium (Gd)	0.029 ppm	Rubidium (Rb)	0.003 ppm		
Gallium (Ga)	N	Ruthenium (Ru)	0.007 ppm		
Germanium (Ge)	0.016 ppm	Samarium (Sm)	0.020 ppm		
Gold (Au)	I	Scandium (Sc)	0.024 ppm		
Hafnium (Hf)	0.008 ppm	Selenium (Se)	I		
Holmium (Ho)	0.003 ppm	Silicon (Si)	I		
Indium (In)	< 0.00003 ppm	Silver (Ag)	I		
Iridium (Ir)	< 0.00007 ppm	Sodium (Na)	0.030 ppm		
Iron (Fe)	N	Strontium (Sr)	0.046 ppm		
Lanthanum (La)	0.051 ppm	Sulfur (S)	I		
Lead (Pb)	< 0.00003 ppm	Tantalum (Ta)	0.224 ppm		
Lithium (Li)	< 0.03 ppm	Tellurium (Te)	I		

Specification	Reference
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Barium Standard, 1000 ppm	EPA (200.8)
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Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
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MSBA1KN-100	100 mL natural LDPE	18 months
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Recommended Storage: 15°C - 30°C (59°F - 86°F)



Paul Brandon (04/11/2023)

Production Manager

This document is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

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