

# Certificate of Analysis

## Boron ICP-MS Standard, 1000 ppm B in H<sub>2</sub>O/tr NH<sub>4</sub>OH

**Lot Number:** 4303J53

**Product Number:** MSB1KW

**Manufacture Date:** MAR 20, 2023

**Expiration Date:** SEP 2024

This is a single element solution that was prepared volumetrically to contain the certified value reported. The uncertainty associated with the certified value is the sum of the estimated errors due to the purity of the raw material, the volumetric preparation of the solution, and transpiration of the solution through the container wall.

The final solution concentration is confirmed by AA, ICP, or ICP-MS, and is traceable to NIST Standard Reference Material 3107. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Water	7732-18-5	
Boric Acid	10043-35-3	
Ammonium Hydroxide	1336-21-6	

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Boron (B)	995-1005 ppm	1000 ppm	3107

### Trace Elements by ICP or ICP - MS

I=Spectral Interference N=Not Tested

All values reported in mg/L (ppm)

Aluminum (Al)	N	Lead (Pb)	0.041 ppm	Strontium (Sr)	0.023 ppm
Antimony (Sb)	< 0.0001 ppm	Lithium (Li)	0.079 ppm	Sulfur (S)	I
Arsenic (As)	0.202 ppm	Lutetium (Lu)	< 0.0003 ppm	Tantalum (Ta)	0.012 ppm
Barium (Ba)	0.262 ppm	Magnesium (Mg)	I	Tellurium (Te)	0.033 ppm
Beryllium (Be)	< 0.0001 ppm	Manganese (Mn)	0.094 ppm	Terbium (Tb)	0.000 ppm
Bismuth (Bi)	0.006 ppm	Mercury (Hg)	< 0.03 ppm	Thallium (Tl)	0.064 ppm
Cadmium (Cd)	< 0.00007 ppm	Molybdenum (Mo)	0.030 ppm	Thorium (Th)	0.003 ppm
Calcium (Ca)	I	Neodymium (Nd)	0.002 ppm	Thulium (Tm)	0.000 ppm
Cerium (Ce)	0.190 ppm	Nickel (Ni)	0.031 ppm	Tin (Sn)	0.021 ppm
Cesium (Cs)	0.017 ppm	Niobium (Nb)	< 0.00008 ppm	Titanium (Ti)	0.013 ppm
Chromium (Cr)	0.083 ppm	Osmium (Os)	0.007 ppm	Tungsten (W)	0.094 ppm
Cobalt (Co)	< 0.00002 ppm	Palladium (Pd)	0.015 ppm	Uranium (U)	0.000 ppm
Copper (Cu)	N	Phosphorus (P)	I	Vanadium (V)	0.038 ppm
Dysprosium (Dy)	0.000 ppm	Platinum (Pt)	0.011 ppm	Ytterbium (Yb)	< 0.001 ppm
Erbium (Er)	N	Potassium (K)	0.553 ppm	Yttrium (Y)	0.009 ppm
Europium (Eu)	0.000 ppm	Praseodymium (Pr)	0.000 ppm	Zinc (Zn)	0.695 ppm
Gadolinium (Gd)	0.001 ppm	Rhenium (Re)	< 0.00003 ppm	Zirconium (Zr)	0.014 ppm
Gallium (Ga)	0.009 ppm	Rhodium (Rh)	< 0.00003 ppm		
Germanium (Ge)	0.003 ppm	Rubidium (Rb)	0.009 ppm		
Gold (Au)	N	Ruthenium (Ru)	0.002 ppm		
Hafnium (Hf)	0.004 ppm	Samarium (Sm)	< 0.002 ppm		
Holmium (Ho)	0.000 ppm	Scandium (Sc)	< 0.00008 ppm		
Indium (In)	0.002 ppm	Selenium (Se)	0.097 ppm		
Iridium (Ir)	0.003 ppm	Silicon (Si)	N		
Iron (Fe)	N	Silver (Ag)	0.120 ppm		
Lanthanum (La)	0.030 ppm	Sodium (Na)	N		

Specification	Reference
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Boron 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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MSB1KW-100	100 mL natural LDPE	18 months
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**Recommended Storage:** 15°C - 30°C (59°F - 86°F)



Paul Brandon (03/20/2023)

Production Manager

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

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