

Certificate of Analysis

Barium ICP Standard, 10,000 ppm Ba in 5% HNO₃
Lot Number: 4403S01

Product Number: PBA10KN

Manufacture Date: MAR 27, 2024

Expiration Date: SEP 2025

The certified value for this product is confirmed in independent testing by a second qualified chemist. The uncertainty associated with the certified value is ± 0.5% relative, which 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 3104a. 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)	9950-10050 ppm Ba	10000 ppm Ba	915

Trace Elements by ICP or ICP - MS

I=Spectral Interference N=Not Tested

All values reported in mg/L (ppm)

Aluminum (Al)	0.1417 ppm	Lead (Pb)	< 0.00003 ppm	Strontium (Sr)	0.4442 ppm
Antimony (Sb)	< 0.0001 ppm	Lithium (Li)	< 0.03 ppm	Sulfur (S)	I
Arsenic (As)	N	Lutetium (Lu)	0.0003 ppm	Tantalum (Ta)	0.1408 ppm
Beryllium (Be)	< 0.0001 ppm	Magnesium (Mg)	0.0199 ppm	Tellurium (Te)	0.0116 ppm
Bismuth (Bi)	0.0069 ppm	Manganese (Mn)	< 0.00002 ppm	Terbium (Tb)	N
Boron (B)	N	Mercury (Hg)	< 0.03 ppm	Thallium (Tl)	< 0.00002 ppm
Cadmium (Cd)	< 0.00007 ppm	Molybdenum (Mo)	0.0190 ppm	Thorium (Th)	0.0007 ppm
Calcium (Ca)	< 0.004 ppm	Neodymium (Nd)	0.1039 ppm	Thulium (Tm)	0.0003 ppm
Cerium (Ce)	0.0017 ppm	Nickel (Ni)	0.0212 ppm	Tin (Sn)	< 0.0002 ppm
Cesium (Cs)	0.3793 ppm	Niobium (Nb)	0.0032 ppm	Titanium (Ti)	0.0369 ppm
Chromium (Cr)	< 0.00006 ppm	Osmium (Os)	< 0.003 ppm	Tungsten (W)	0.0184 ppm
Cobalt (Co)	< 0.00002 ppm	Palladium (Pd)	I	Uranium (U)	< 0.00007 ppm
Copper (Cu)	N	Phosphorus (P)	I	Vanadium (V)	< 0.00004 ppm
Dysprosium (Dy)	0.0004 ppm	Platinum (Pt)	< 0.00003 ppm	Ytterbium (Yb)	< 0.001 ppm
Erbium (Er)	0.0003 ppm	Potassium (K)	< 0.00002 ppm	Yttrium (Y)	I
Europium (Eu)	N	Praseodymium (Pr)	0.0008 ppm	Zinc (Zn)	N
Gadolinium (Gd)	0.2966 ppm	Rhenium (Re)	0.0008 ppm	Zirconium (Zr)	0.0050 ppm
Gallium (Ga)	N	Rhodium (Rh)	< 0.00003 ppm		
Germanium (Ge)	< 0.0003 ppm	Rubidium (Rb)	0.0022 ppm		
Gold (Au)	I	Ruthenium (Ru)	< 0.00007 ppm		
Hafnium (Hf)	< 0.001 ppm	Samarium (Sm)	0.2214 ppm		
Holmium (Ho)	0.0001 ppm	Scandium (Sc)	0.0160 ppm		
Indium (In)	0.1441 ppm	Selenium (Se)	0.0828 ppm		
Iridium (Ir)	I	Silicon (Si)	I		
Iron (Fe)	N	Silver (Ag)	< 0.0004 ppm		
Lanthanum (La)	0.4114 ppm	Sodium (Na)	N		

Specification	Reference
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Barium ICP, 10K ppm in HNO ₃ This standard is guaranteed to be stable and accurate provided the product is kept tightly capped and stored under normal laboratory conditions. Balances are calibrated using NIST traceable weights whose verification of maintenance and recalibration is documented per in-house Standard Operating Procedures. Class A glassware is also calibrated and routinely rechecked per in-house Standard Operating Procedures. Trace metal analyzed acids and Trace Metals Analyzed Water are used in the manufacture of this product. Triple cleaned containers are used in the manufacture of this product.	EPA (200.7)
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Part Number	Size / Package Type	Shelf Life (Unopened Container)
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PBA10KN-50	50 mL natural poly	18 months
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Recommended Storage: 15°C - 30°C (59°F - 86°F)



Paul Brandon (03/27/2024)

Production Manager

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

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