

Certificate of Analysis

Silver ICP Standard, 1000 ppm Ag in 3% HNO₃

Lot Number: 4309N13

Product Number: PAG1KN

Manufacture Date: SEP 25, 2023

Expiration Date: MAR 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 3151. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Water	7732-18-5	
Nitric Acid	7697-37-2	
Silver Nitrate	7761-88-8	

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Assay (vs. Potassium Thiocyanate/Volhard's Indicator)	995-1005 ppm Ag	1000 ppm Ag	999

Trace Elements by ICP or ICP - MS

I=Spectral Interference N=Not Tested

All values reported in mg/L (ppm)

Aluminum (Al)	0.4075 ppm	Iron (Fe)	N	Silicon (Si)	I
Antimony (Sb)	0.0584 ppm	Lanthanum (La)	N	Sodium (Na)	N
Arsenic (As)	0.0762 ppm	Lead (Pb)	N	Strontium (Sr)	0.0204 ppm
Barium (Ba)	0.1982 ppm	Lithium (Li)	0.0548 ppm	Sulfur (S)	I
Beryllium (Be)	0.0269 ppm	Lutetium (Lu)	< 0.0003 ppm	Tantalum (Ta)	I
Bismuth (Bi)	< 0.00002 ppm	Magnesium (Mg)	I	Tellurium (Te)	0.0167 ppm
Boron (B)	0.0440 ppm	Manganese (Mn)	N	Terbium (Tb)	0.0003 ppm
Cadmium (Cd)	0.0128 ppm	Mercury (Hg)	< 0.03 ppm	Thallium (Tl)	< 0.00002 ppm
Calcium (Ca)	I	Molybdenum (Mo)	0.1218 ppm	Thorium (Th)	0.0061 ppm
Cerium (Ce)	0.0573 ppm	Neodymium (Nd)	0.0005 ppm	Thulium (Tm)	N
Cesium (Cs)	0.0133 ppm	Nickel (Ni)	N	Tin (Sn)	0.1105 ppm
Chromium (Cr)	0.4173 ppm	Niobium (Nb)	< 0.00008 ppm	Titanium (Ti)	I
Cobalt (Co)	0.1356 ppm	Osmium (Os)	< 0.003 ppm	Tungsten (W)	0.0154 ppm
Copper (Cu)	N	Palladium (Pd)	0.0036 ppm	Uranium (U)	0.0001 ppm
Dysprosium (Dy)	0.0001 ppm	Phosphorus (P)	I	Vanadium (V)	0.0048 ppm
Erbium (Er)	N	Platinum (Pt)	0.0011 ppm	Ytterbium (Yb)	< 0.001 ppm
Europium (Eu)	0.0001 ppm	Potassium (K)	N	Yttrium (Y)	0.0015 ppm
Gadolinium (Gd)	0.0031 ppm	Praseodymium (Pr)	0.0001 ppm	Zinc (Zn)	N
Gallium (Ga)	0.0054 ppm	Rhenium (Re)	0.0001 ppm	Zirconium (Zr)	0.0093 ppm
Germanium (Ge)	0.1956 ppm	Rhodium (Rh)	N		
Gold (Au)	0.7222 ppm	Rubidium (Rb)	0.1880 ppm		
Hafnium (Hf)	0.0013 ppm	Ruthenium (Ru)	< 0.00007 ppm		
Holmium (Ho)	< 0.0001 ppm	Samarium (Sm)	< 0.002 ppm		
Indium (In)	0.0001 ppm	Scandium (Sc)	0.0007 ppm		
Iridium (Ir)	< 0.00007 ppm	Selenium (Se)	I		

Specification	Reference
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Silver ICP Standard, 1 mL = 1 mg Ag (1,000 ppm Ag) AgNO₃ in 3% HNO₃ EPA (200.7)

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.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
PAG1KN-100	100 mL amber poly	18 months
PAG1KN-500	500 mL amber poly	18 months

Recommended Storage: 15°C - 30°C (59°F - 86°F)



Paul Brandon (09/25/2023)

Production Manager

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

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