

Certificate of Analysis

Silver ICP-MS Standard, 1000 ppm Ag in 3% HNO₃

Lot Number: 4402K86

Product Number: MSAG1KN

Manufacture Date: FEB 15, 2024

Expiration Date: AUG 2025

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 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)	0.408 ppm	Lead (Pb)	N	Tantalum (Ta)	I
Antimony (Sb)	0.058 ppm	Lithium (Li)	0.055 ppm	Tellurium (Te)	0.017 ppm
Arsenic (As)	0.076 ppm	Lutetium (Lu)	< 0.0003 ppm	Terbium (Tb)	0.000 ppm
Barium (Ba)	0.198 ppm	Magnesium (Mg)	I	Thallium (Tl)	< 0.00002 ppm
Beryllium (Be)	0.027 ppm	Manganese (Mn)	N	Thorium (Th)	0.006 ppm
Bismuth (Bi)	< 0.00002 ppm	Mercury (Hg)	< 0.03 ppm	Thulium (Tm)	N
Boron (B)	0.044 ppm	Molybdenum (Mo)	0.122 ppm	Tin (Sn)	0.111 ppm
Cadmium (Cd)	0.013 ppm	Neodymium (Nd)	0.001 ppm	Titanium (Ti)	I
Calcium (Ca)	I	Nickel (Ni)	N	Tungsten (W)	0.015 ppm
Cerium (Ce)	0.057 ppm	Niobium (Nb)	< 0.00008 ppm	Uranium (U)	0.000 ppm
Cesium (Cs)	0.013 ppm	Osmium (Os)	< 0.003 ppm	Vanadium (V)	0.005 ppm
Chromium (Cr)	0.417 ppm	Palladium (Pd)	0.004 ppm	Ytterbium (Yb)	< 0.001 ppm
Cobalt (Co)	0.136 ppm	Phosphorus (P)	I	Yttrium (Y)	0.002 ppm
Copper (Cu)	N	Platinum (Pt)	0.001 ppm	Zinc (Zn)	N
Dysprosium (Dy)	0.000 ppm	Potassium (K)	N	Zirconium (Zr)	0.009 ppm
Erbium (Er)	N	Praseodymium (Pr)	0.000 ppm		
Europium (Eu)	0.000 ppm	Rhenium (Re)	0.000 ppm		
Gadolinium (Gd)	0.003 ppm	Rhodium (Rh)	N		
Gallium (Ga)	0.005 ppm	Rubidium (Rb)	0.188 ppm		
Germanium (Ge)	0.196 ppm	Ruthenium (Ru)	< 0.00007 ppm		
Gold (Au)	0.722 ppm	Samarium (Sm)	< 0.002 ppm		
Hafnium (Hf)	0.001 ppm	Scandium (Sc)	0.001 ppm		
Holmium (Ho)	< 0.0001 ppm	Selenium (Se)	I		
Indium (In)	0.000 ppm	Silicon (Si)	I		
Iridium (Ir)	< 0.00007 ppm	Sodium (Na)	N		
Iron (Fe)	N	Strontium (Sr)	0.020 ppm		
Lanthanum (La)	N	Sulfur (S)	I		

Specification	Reference
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Silver ICPMS, 1000 ppm in HNO₃

EPA (200.8)

Silver ICPMS, 1000 ppm in HNO₃

EPA (SW-846) (6020)

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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MSAG1KN-100

100 mL amber poly

18 months

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



Paul Brandon (02/15/2024)

Production Manager

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

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