

Certificate of Analysis

Arsenic ICP-MS Standard, 1000 ppm As in 3% HNO₃

Lot Number: 4404E44

Product Number: MSAS1KN

Manufacture Date: APR 03, 2024

Expiration Date: SEP 2025

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 3103a. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Water	7732-18-5	
Nitric Acid	7697-37-2	
Arsenic	7440-38-2	

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Arsenic (As)	995-1005 ppm	1000 ppm	3103

Trace Elements by ICP or ICP - MS

I=Spectral Interference N=Not Tested

All values reported in mg/L (ppm)

Aluminum (Al)	0.026 ppm	Lead (Pb)	0.001 ppm	Strontium (Sr)	0.008 ppm
Antimony (Sb)	0.217 ppm	Lithium (Li)	< 0.03 ppm	Sulfur (S)	I
Barium (Ba)	0.021 ppm	Lutetium (Lu)	< 0.0003 ppm	Tantalum (Ta)	0.187 ppm
Beryllium (Be)	< 0.0001 ppm	Magnesium (Mg)	0.157 ppm	Tellurium (Te)	0.101 ppm
Bismuth (Bi)	0.058 ppm	Manganese (Mn)	< 0.00002 ppm	Terbium (Tb)	< 0.00003 ppm
Boron (B)	0.026 ppm	Mercury (Hg)	< 0.03 ppm	Thallium (Tl)	0.010 ppm
Cadmium (Cd)	< 0.00007 ppm	Molybdenum (Mo)	0.017 ppm	Thorium (Th)	0.001 ppm
Calcium (Ca)	0.865 ppm	Neodymium (Nd)	< 0.0002 ppm	Thulium (Tm)	< 0.00002 ppm
Cerium (Ce)	0.003 ppm	Nickel (Ni)	0.008 ppm	Tin (Sn)	0.006 ppm
Cesium (Cs)	0.008 ppm	Niobium (Nb)	0.016 ppm	Titanium (Ti)	0.013 ppm
Chromium (Cr)	< 0.00006 ppm	Osmium (Os)	< 0.003 ppm	Tungsten (W)	0.034 ppm
Cobalt (Co)	< 0.00002 ppm	Palladium (Pd)	0.003 ppm	Uranium (U)	0.000 ppm
Copper (Cu)	0.006 ppm	Phosphorus (P)	I	Vanadium (V)	< 0.00004 ppm
Dysprosium (Dy)	< 0.0001 ppm	Platinum (Pt)	0.002 ppm	Ytterbium (Yb)	< 0.001 ppm
Erbium (Er)	< 0.00007 ppm	Potassium (K)	0.628 ppm	Yttrium (Y)	0.001 ppm
Europium (Eu)	0.001 ppm	Praseodymium (Pr)	N	Zinc (Zn)	0.095 ppm
Gadolinium (Gd)	< 0.0002 ppm	Rhenium (Re)	< 0.00003 ppm	Zirconium (Zr)	0.007 ppm
Gallium (Ga)	0.001 ppm	Rhodium (Rh)	0.000 ppm		
Germanium (Ge)	0.002 ppm	Rubidium (Rb)	0.000 ppm		
Gold (Au)	< 0.0005 ppm	Ruthenium (Ru)	0.001 ppm		
Hafnium (Hf)	0.002 ppm	Samarium (Sm)	< 0.002 ppm		
Holmium (Ho)	< 0.0001 ppm	Scandium (Sc)	0.001 ppm		
Indium (In)	0.003 ppm	Selenium (Se)	< 0.004 ppm		
Iridium (Ir)	0.011 ppm	Silicon (Si)	I		
Iron (Fe)	N	Silver (Ag)	N		
Lanthanum (La)	0.000 ppm	Sodium (Na)	0.249 ppm		

Specification	Reference
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Arsenic ICPMS, 1000 ppm / HNO3	EPA (200.8)
Arsenic ICPMS, 1000 ppm / 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)
MSAS1KN-100	100 mL natural LDPE	18 months

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



Paul Brandon (04/03/2024)

Production Manager

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

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