RICCA CHEMICAL COMPANY®

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Certificate of Analysis

Antimony ICP-MS Standard, 1000 ppm Sb in H_2O/Tartaric Acid/tr HNO_3

Lot Number: 4312F27 **Product Number:** MSSB1KW

Manufacture Date: DEC 13, 2023
Expiration Date: JUN 2025

This is a single element solution that was prepared volumetrically to contain the certified value reported. The uncertainty associated with the certifiec 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 3102. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Water	7732-18-5	
Nitric Acid	7697-37-2	
Hydrochloric Acid	7647-01-0	
Antimony	7440-36-0	
Tartaric Acid	87-69-4	

Test	Specification	Result	NIST SRM#
Antimony (Sb)	995-1005 ppm	1000 ppm	3102
Appearance	Colorless liquid	Passed	

I=Spectral Interference N=Not Tested

Trace Elements by ICP or ICP - MS

All values reported in mg/L (ppm)

Aluminum (Al)	0.362 ppm	Iron (Fe)	< 0.001 ppm	Selenium (Se)	< 0.004 ppm
Arsenic (As)	< 0.0007 ppm	Lanthanum (La)	< 0.00004 ppn	Silicon (Si)	I
Barium (Ba)	0.002 ppm	Lead (Pb)	< 0.00003 ppn	Silver (Ag)	0.593 ppm
Beryllium (Be)	< 0.0001 ppm	Lithium (Li)	< 0.03 ppm	Sodium (Na)	< 0.02 ppm
Bismuth (Bi)	< 0.00002 ppn	Lutetium (Lu)	< 0.0003 ppm	Strontium (Sr)	< 0.00006 ppn
Boron (B)	0.026 ppm	Magnesium (Mg)	< 0.0007 ppm	Sulfur (S)	I
Cadmium (Cd)	< 0.00007 ppn	Manganese (Mn)	< 0.00002 ppn	Tantalum (Ta)	0.224 ppm
Calcium (Ca)	< 0.004 ppm	Mercury (Hg)	< 0.03 ppm	Tellurium (Te)	0.087 ppm
Cerium (Ce)	< 0.00003 ppn	Molybdenum (Mo)	0.233 ppm	Terbium (Tb)	N
Cesium (Cs)	0.008 ppm	Neodymium (Nd)	< 0.0002 ppm	Thallium (Tl)	0.051 ppm
Chromium (Cr)	< 0.00006 ppn	Nickel (Ni)	< 0.0001 ppm	Thorium (Th)	0.006 ppm
Cobalt (Co)	0.000 ppm	Niobium (Nb)	0.007 ppm	Thulium (Tm)	N
Copper (Cu)	< 0.00005 ppn	Osmium (Os)	0.003 ppm	Tin (Sn)	0.009 ppm
Dysprosium (Dy)	< 0.0001 ppm	Palladium (Pd)	0.012 ppm	Titanium (Ti)	0.015 ppm
Erbium (Er)	< 0.00007 ppn	Phosphorus (P)	I	Tungsten (W)	0.018 ppm
Europium (Eu)	0.000 ppm	Platinum (Pt)	0.006 ppm	Uranium (U)	< 0.00007 ppn
Gadolinium (Gd)	< 0.0002 ppm	Potassium (K)	< 0.00002 ppn	Vanadium (V)	< 0.00004 ppn
Gallium (Ga)	< 0.0006 ppm	Praseodymium (Pr)	N	Ytterbium (Yb)	< 0.001 ppm
Germanium (Ge)	0.004 ppm	Rhenium (Re)	< 0.00003 ppn	Yttrium (Y)	< 0.00009 ppn
Gold (Au)	< 0.0005 ppm	Rhodium (Rh)	< 0.00003 ppn	Zinc (Zn)	< 0.0003 ppm
Hafnium (Hf)	0.007 ppm	Rubidium (Rb)	< 0.00004 ppn	Zirconium (Zr)	0.015 ppm
Holmium (Ho)	< 0.0001 ppm	Ruthenium (Ru)	< 0.00007 ppn		
Indium (In)	< 0.00003 ppn	Samarium (Sm)	< 0.002 ppm		
Iridium (Ir)	< 0.00007 ppn	Scandium (Sc)	0.006 ppm		

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)
MSSB1KW-100	100 mL natural LDPE	18 months

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

Paul Brandon (12/13/2023)
Production Manager
This document is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."