RICCA CHEMICAL COMPANY®

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Certificate of Analysis

Cadmium ICP-MS Standard, 1000 ppm Cd in 3% HNO_3

Lot Number: 4404E45 **Product Number:** MSCD1KN

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 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 3108. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Water	7732-18-5	
Nitric Acid	7697-37-2	
Cadmium	7440-43-9	

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Assay (vs. EDTA/Xylenol Orange)	997-1003 ppm Cd	1000 ppm Cd	915

I=Spectral Interference N=Not Tested

Trace Elements by ICP or ICP - MS

All values reported in mg/L (ppm)

Aluminum (Al)	< 0.0009 ppm	Lead (Pb)	< 0.00003 ppn	Strontium (Sr)	< 0.00006 ppn
Antimony (Sb)	< 0.0001 ppm	Lithium (Li)	< 0.03 ppm	Sulfur (S)	I
Arsenic (As)	0.103 ppm	Lutetium (Lu)	< 0.0003 ppm	Tantalum (Ta)	0.086 ppm
Barium (Ba)	< 0.0001 ppm	Magnesium (Mg)	< 0.0007 ppm	Tellurium (Te)	0.208 ppm
Beryllium (Be)	< 0.0001 ppm	Manganese (Mn)	0.001 ppm	Terbium (Tb)	< 0.00003 ppn
Bismuth (Bi)	0.008 ppm	Mercury (Hg)	< 0.03 ppm	Thallium (Tl)	0.097 ppm
Boron (B)	< 0.00005 ppn	Molybdenum (Mo)	0.096 ppm	Thorium (Th)	0.002 ppm
Calcium (Ca)	< 0.004 ppm	Neodymium (Nd)	< 0.0002 ppm	Thulium (Tm)	< 0.00002 ppn
Cerium (Ce)	0.000 ppm	Nickel (Ni)	< 0.0001 ppm	Tin (Sn)	< 0.0002 ppm
Cesium (Cs)	0.282 ppm	Niobium (Nb)	0.007 ppm	Titanium (Ti)	I
Chromium (Cr)	< 0.00006 ppn	Osmium (Os)	0.006 ppm	Tungsten (W)	0.055 ppm
Cobalt (Co)	< 0.00002 ppn	Palladium (Pd)	0.003 ppm	Uranium (U)	< 0.00007 ppn
Copper (Cu)	I	Phosphorus (P)	I	Vanadium (V)	< 0.00004 ppn
Dysprosium (Dy)	< 0.0001 ppm	Platinum (Pt)	0.001 ppm	Ytterbium (Yb)	< 0.001 ppm
Erbium (Er)	< 0.00007 ppn	Potassium (K)	I	Yttrium (Y)	< 0.00009 ppn
Europium (Eu)	0.000 ppm	Praseodymium (Pr)	< 0.00003 ppn	Zinc (Zn)	< 0.0003 ppm
Gadolinium (Gd)	0.000 ppm	Rhenium (Re)	< 0.00003 ppn	Zirconium (Zr)	0.011 ppm
Gallium (Ga)	< 0.0006 ppm	Rhodium (Rh)	< 0.00003 ppn		
Germanium (Ge)	< 0.0003 ppm	Rubidium (Rb)	< 0.00004 ppn		
Gold (Au)	I	Ruthenium (Ru)	< 0.00007 ppn		
Hafnium (Hf)	0.005 ppm	Samarium (Sm)	< 0.002 ppm		
Holmium (Ho)	< 0.0001 ppm	Scandium (Sc)	< 0.00008 ppn		
Indium (In)	0.016 ppm	Selenium (Se)	0.259 ppm		
Iridium (Ir)	0.001 ppm	Silicon (Si)	I		
Iron (Fe)	< 0.001 ppm	Silver (Ag)	0.094 ppm		
Lanthanum (La)	< 0.00004 ppn	Sodium (Na)	0.031 ppm		

Specification	Reference
Cadmium ICPMS, 1000 ppm / HNO3	EPA (200.8)
Cadmium 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)
MSCD1KN-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."