

Certificate of Analysis

Chromium ICP-MS Standard, 1000 ppm Cr in 3% HNO₃

Lot Number: 4403N95

Product Number: MSCR1KN

Manufacture Date: MAR 25, 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 3112. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Water	7732-18-5	
Nitric Acid	7697-37-2	
Chromium Nitrate Nonahydrate	7789-02-8	

Test	Specification	Result	NIST SRM#
Appearance	Dark blue liquid	Passed	
Chromium (Cr)	997-1003 ppm	1000 ppm	3112

Trace Elements by ICP or ICP - MS

I=Spectral Interference N=Not Tested

All values reported in mg/L (ppm)

Aluminum (Al)	0.016 ppm	Lead (Pb)	0.012 ppm	Strontium (Sr)	0.006 ppm
Antimony (Sb)	< 0.0001 ppm	Lithium (Li)	0.007 ppm	Sulfur (S)	I
Arsenic (As)	0.526 ppm	Lutetium (Lu)	< 0.0003 ppm	Tantalum (Ta)	< 0.00006 ppm
Barium (Ba)	< 0.0001 ppm	Magnesium (Mg)	0.031 ppm	Tellurium (Te)	0.155 ppm
Beryllium (Be)	0.024 ppm	Manganese (Mn)	0.019 ppm	Terbium (Tb)	N
Bismuth (Bi)	0.001 ppm	Mercury (Hg)	< 0.03 ppm	Thallium (Tl)	0.141 ppm
Boron (B)	0.099 ppm	Molybdenum (Mo)	0.037 ppm	Thorium (Th)	0.002 ppm
Cadmium (Cd)	0.006 ppm	Neodymium (Nd)	0.003 ppm	Thulium (Tm)	N
Calcium (Ca)	0.307 ppm	Nickel (Ni)	0.450 ppm	Tin (Sn)	0.003 ppm
Cerium (Ce)	0.003 ppm	Niobium (Nb)	I	Titanium (Ti)	< 0.001 ppm
Cesium (Cs)	0.004 ppm	Osmium (Os)	< 0.003 ppm	Tungsten (W)	0.036 ppm
Cobalt (Co)	0.003 ppm	Palladium (Pd)	0.032 ppm	Uranium (U)	N
Copper (Cu)	0.259 ppm	Phosphorus (P)	I	Vanadium (V)	< 0.00004 ppm
Dysprosium (Dy)	< 0.0001 ppm	Platinum (Pt)	0.001 ppm	Ytterbium (Yb)	< 0.001 ppm
Erbium (Er)	0.000 ppm	Potassium (K)	0.659 ppm	Yttrium (Y)	0.028 ppm
Europium (Eu)	0.000 ppm	Praseodymium (Pr)	0.001 ppm	Zinc (Zn)	0.468 ppm
Gadolinium (Gd)	0.000 ppm	Rhenium (Re)	0.000 ppm	Zirconium (Zr)	0.041 ppm
Gallium (Ga)	0.565 ppm	Rhodium (Rh)	0.010 ppm		
Germanium (Ge)	0.009 ppm	Rubidium (Rb)	0.177 ppm		
Gold (Au)	< 0.0005 ppm	Ruthenium (Ru)	N		
Hafnium (Hf)	0.006 ppm	Samarium (Sm)	0.006 ppm		
Holmium (Ho)	< 0.0001 ppm	Scandium (Sc)	0.003 ppm		
Indium (In)	N	Selenium (Se)	N		
Iridium (Ir)	0.001 ppm	Silicon (Si)	I		
Iron (Fe)	N	Silver (Ag)	0.087 ppm		
Lanthanum (La)	0.005 ppm	Sodium (Na)	N		

Specification	Reference
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Chromium Standard, 1000 ppm

EPA (200.8)

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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MSCR1KN-100

100 mL natural LDPE

18 months

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



Paul Brandon (03/25/2024)

Production Manager

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

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