

Certificate of Analysis

Cerium ICP Standard, 1000 ppm Ce in 3% HNO₃

Lot Number: 4404J57

Product Number: PCE1KN

Manufacture Date: APR 16, 2024

Expiration Date: OCT 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 3110. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Cerium (III) Nitrate Hexahydrate	10294-41-4	
Nitric Acid	7697-37-2	
Water	7732-18-5	

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Cerium (Ce)	995-1005 ppm	1000 ppm	3110

Trace Elements by ICP or ICP - MS

I=Spectral Interference N=Not Tested

All values reported in mg/L (ppm)

Aluminum (Al)	0.3114 ppm	Lead (Pb)	< 0.00003 ppm	Strontium (Sr)	0.0071 ppm
Antimony (Sb)	< 0.0001 ppm	Lithium (Li)	< 0.03 ppm	Sulfur (S)	I
Arsenic (As)	I	Lutetium (Lu)	0.0006 ppm	Tantalum (Ta)	0.1199 ppm
Barium (Ba)	0.0311 ppm	Magnesium (Mg)	0.1343 ppm	Tellurium (Te)	I
Beryllium (Be)	I	Manganese (Mn)	< 0.00002 ppm	Terbium (Tb)	0.6920 ppm
Bismuth (Bi)	0.0104 ppm	Mercury (Hg)	< 0.03 ppm	Thallium (Tl)	I
Boron (B)	0.0371 ppm	Molybdenum (Mo)	0.0625 ppm	Thorium (Th)	< 0.0002 ppm
Cadmium (Cd)	< 0.00007 ppm	Neodymium (Nd)	0.0582 ppm	Thulium (Tm)	N
Calcium (Ca)	0.4587 ppm	Nickel (Ni)	0.0231 ppm	Tin (Sn)	0.0802 ppm
Cesium (Cs)	0.0268 ppm	Niobium (Nb)	0.0031 ppm	Titanium (Ti)	0.0186 ppm
Chromium (Cr)	I	Osmium (Os)	< 0.003 ppm	Tungsten (W)	0.0462 ppm
Cobalt (Co)	< 0.00002 ppm	Palladium (Pd)	0.0066 ppm	Uranium (U)	< 0.00007 ppm
Copper (Cu)	N	Phosphorus (P)	I	Vanadium (V)	I
Dysprosium (Dy)	0.0020 ppm	Platinum (Pt)	< 0.00003 ppm	Ytterbium (Yb)	0.0134 ppm
Erbium (Er)	0.0010 ppm	Potassium (K)	N	Yttrium (Y)	0.0142 ppm
Europium (Eu)	0.0226 ppm	Praseodymium (Pr)	0.1245 ppm	Zinc (Zn)	0.1273 ppm
Gadolinium (Gd)	N	Rhenium (Re)	0.0075 ppm	Zirconium (Zr)	0.0028 ppm
Gallium (Ga)	0.4913 ppm	Rhodium (Rh)	< 0.00003 ppm		
Germanium (Ge)	< 0.0003 ppm	Rubidium (Rb)	0.0026 ppm		
Gold (Au)	I	Ruthenium (Ru)	< 0.00007 ppm		
Hafnium (Hf)	I	Samarium (Sm)	< 0.002 ppm		
Holmium (Ho)	0.0002 ppm	Scandium (Sc)	0.0027 ppm		
Indium (In)	0.0006 ppm	Selenium (Se)	I		
Iridium (Ir)	< 0.00007 ppm	Silicon (Si)	I		
Iron (Fe)	N	Silver (Ag)	< 0.0004 ppm		
Lanthanum (La)	0.0554 ppm	Sodium (Na)	N		

Specification	Reference
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Cerium ICP Standard, 1 mL = 1 mg Ce (1,000 ppm Ce) Ce(NO₃)₃ in 3% HNO₃ EPA (200.7)

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 This standard is guaranteed to be stable and accurate provided the product is kept tightly capped and stored under normal laboratory conditions. Balances are calibrated using NIST traceable weights whose verification of maintenance and recalibration is documented per in-house Standard Operating Procedures. Class A glassware is also calibrated and routinely rechecked per in-house Standard Operating Procedures. Trace metal analyzed acids and Trace Metals Analyzed Water are used in the manufacture of this product. Triple cleaned containers are used in the manufacture of this product.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
PCE1KN-100	100 mL natural LDPE	18 months

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



Paul Brandon (04/16/2024)

Production Manager

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

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