RICCA CHEMICAL COMPANY®

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Certificate of Analysis

Aluminum ICP Standard, 10,000 ppm Al in 5% HNO_3

Lot Number: 4404G57 **Product Number:** PAL10KN

Manufacture Date: APR 09, 2024
Expiration Date: SEP 2025

The certified value for this product is confirmed in independent testing by a second qualified chemist. The uncertainty associated with the certified value is ± 0.5% relative, which 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 3101. All trace level elements were determined by ICP or ICP-MS.

Name	CAS#	Grade
Water	7732-18-5	
Nitric Acid	7697-37-2	
Aluminum Nitrate Nonahydrate	7784-27-2	

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Assay (vs. EDTA/Dithizone)	9950-10050 ppm Al	10000 ppm Al	915

I=Spectral Interference N=Not Tested

Trace Elements by ICP or ICP - MS

All values reported in mg/L (ppm)

Antimony (Sb)	< 0.0001 ppm	Lead (Pb)	< 0.00003 ppm	Strontium (Sr)	0.0021 ppm
Arsenic (As)	0.0038 ppm	Lithium (Li)	< 0.03 ppm	Sulfur (S)	I
Barium (Ba)	0.0203 ppm	Lutetium (Lu)	< 0.0003 ppm	Tantalum (Ta)	0.2184 ppm
Beryllium (Be)	0.0077 ppm	Magnesium (Mg)	0.0489 ppm	Tellurium (Te)	0.0330 ppm
Bismuth (Bi)	< 0.00002 ppm	Manganese (Mn)	< 0.00002 ppm	Terbium (Tb)	0.0037 ppm
Boron (B)	0.0121 ppm	Mercury (Hg)	< 0.03 ppm	Thallium (Tl)	I
Cadmium (Cd)	0.0007 ppm	Molybdenum (Mo)	0.0221 ppm	Thorium (Th)	0.0010 ppm
Calcium (Ca)	0.8658 ppm	Neodymium (Nd)	0.0085 ppm	Thulium (Tm)	< 0.00002 ppm
Cerium (Ce)	0.0027 ppm	Nickel (Ni)	0.0921 ppm	Tin (Sn)	< 0.0002 ppm
Cesium (Cs)	0.0117 ppm	Niobium (Nb)	0.0028 ppm	Titanium (Ti)	0.0344 ppm
Chromium (Cr)	N	Osmium (Os)	< 0.003 ppm	Tungsten (W)	0.0292 ppm
Cobalt (Co)	0.0576 ppm	Palladium (Pd)	< 0.0004 ppm	Uranium (U)	0.0002 ppm
Copper (Cu)	0.0610 ppm	Phosphorus (P)	I	Vanadium (V)	< 0.00004 ppm
Dysprosium (Dy)	0.0004 ppm	Platinum (Pt)	0.0012 ppm	Ytterbium (Yb)	< 0.001 ppm
Erbium (Er)	< 0.00007 ppm	Potassium (K)	< 0.00002 ppm	Yttrium (Y)	0.0052 ppm
Europium (Eu)	0.0001 ppm	Praseodymium (Pr)	N	Zinc (Zn)	0.2034 ppm
Gadolinium (Gd)	0.0021 ppm	Rhenium (Re)	0.0004 ppm	Zirconium (Zr)	0.1553 ppm
Gallium (Ga)	N	Rhodium (Rh)	< 0.00003 ppm		
Germanium (Ge)	< 0.0003 ppm	Rubidium (Rb)	< 0.00004 ppm		
Gold (Au)	< 0.0005 ppm	Ruthenium (Ru)	< 0.00007 ppm		
Hafnium (Hf)	0.0049 ppm	Samarium (Sm)	< 0.002 ppm		
Holmium (Ho)	< 0.0001 ppm	Scandium (Sc)	0.0001 ppm		
Indium (In)	0.0011 ppm	Selenium (Se)	I		
Iridium (Ir)	< 0.00007 ppm	Silicon (Si)	< 0.007 ppm		
Iron (Fe)	I	Silver (Ag)	< 0.0004 ppm		
Lanthanum (La)	0.0034 ppm	Sodium (Na)	0.4839 ppm		

Specification	Reference
Aluminum ICP, 10K ppm in HNO3	EPA (200.7)

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)
PAL10KN-50	50 mL natural poly	18 months

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

Paul Brandon (04/09/2024)
Production Manager
This document is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."