



# Certificate of Analysis

**ULTRAGrade™ Solution**  
**Cobalt ICP / ICP-MS Standard**  
**10000 µg/mL**

**Catalog Number:** ICP-127  
**Lot Number:** CM-4368  
**Lot Issue Date:** 08/17/2015  
**Expiration Date:** 09/30/2022

Starting Material: Cobalt (II) nitrate hexahydrate  
Starting Material Purity: 99.999%  
Starting Material Lot #: RM07861  
Matrix: 2% nitric acid in low TOC water (< 50 ppb)  
Atomic Weight Co: 58.93

### Certified Value: 10020 ± 20 µg/mL

This Certified Reference Material (CRM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system. The analyte concentration(s) were prepared and verified by an ISO Guide 34 / ISO 17025 accredited laboratory, and compared to calibration standards independently prepared using NIST SRM(s). The certified value and uncertainty value at the 95% confidence level for each analyte is determined gravimetrically.

Classical Wet Assay Method: Theoretical, based on gravimetric measurements

### Confirmation by Inductively Coupled Plasma Spectroscopy (ICP / ICP/MS) vs. NIST SRM 3113

ULTRA uses purified acids, 18 megohm double deionized water, calibrated Class A glassware & meticulously cleaned bottles in the manufacturing of ULTRAGrade standards. Balances used in the manufacturing of this standard are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1 and ISO 9001.

### Trace Metallic Impurities in Solution Standard in µg/mL:

* Al <0.005 ND	* Ga <0.005 ND	* Nb <0.005 ND	n S
* Sb <0.005 ND	n Ge	n Os	* Ta <0.005 ND
* As <0.005 ND	* Au <0.005 ND	* Pd <0.005 ND	n Te
* Ba <0.005 ND	* Hf <0.005 ND	n P	* Tb <0.005 ND
* Be <0.005 ND	* Ho <0.005 ND	* Pt <0.005 ND	n Tl
n Bi	* In <0.005 ND	* K <0.005 ND	* Th <0.005 ND
* B <0.005 ND	n Ir	* Pr <0.005 ND	* Tm <0.005 ND
* Cd <0.005 ND	* Fe <0.005 D	* Re <0.005 ND	* Sn <0.005 ND
* Ca <0.005 ND	* La <0.005 ND	* Rh <0.005 ND	* Ti <0.005 ND
n Ce	* Pb <0.005 ND	n Rb	* W <0.005 ND
n Cs	* Li <0.005 ND	* Ru <0.005 ND	* U <0.005 ND
* Cr <0.005 ND	n Lu	* Sm <0.005 ND	* V <0.005 ND
s Co	* Mg <0.005 ND	* Sc <0.005 ND	* Yb <0.005 ND
* Cu <0.005 ND	* Mn <0.005 ND	n Se	* Y <0.005 ND
* Dy <0.005 ND	n Hg	n Si	* Zn <0.005 ND
* Er <0.005 ND	* Mo <0.005 ND	* Ag <0.005 ND	n Zr <0.005 ND
* Eu <0.005 ND	* Nd <0.005 ND	* Na <0.005 ND	
* Gd <0.005 ND	* Ni <0.005 D	* Sr <0.005 ND	

\* - element checked for      I - spectral interference      n - not checked for  
ND - not detected              D - detected                      s - solution standard element

Density of Solution (measured at 20.00°C ± 0.05°C): 1.0348 g/mL



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Quality Assurance Manager

ISO 9001 Registered Quality System - TUV USA