



Certificate of Analysis

ULTRAGrade™ Solution
Iridium ICP / ICP-MS Standard
1000 µg/mL

Catalog Number: ICP-077
Lot Number: R01184
Lot Issue Date: 11/08/2013
Expiration Date: 12/31/2020

Starting Material: iridium(III) chloride
 Starting Material Purity: 99.95%
 Starting Material Lot #: BH01955
 Matrix: 5% hydrochloric acid in low TOC water (< 50 ppb)
 Atomic Weight Ir: 192.2

Certified Value: 1001 ± 2 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. second source

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	n Nb	n S
* Sb <0.005 ND	n Ge	n Os	n Ta
* As <0.005 ND	* Au <0.005 D	* Pd <0.005 D	n Te
* Ba <0.005 ND	n Hf	* P <0.005 ND	n Tb
* Be <0.005 ND	n Ho	* Pt <0.250 D	* Tl <0.005 ND
* Bi <0.005 ND	* In <0.005 ND	* K <0.005 D	n Th
* B <0.005 ND	s Ir	n Pr	n Tm
* Cd <0.005 D	* Fe <0.005 D	n Re	* Sn <0.005 ND
* Ca <0.005 D	* La <0.005 ND	* Rh <0.500 D	* Ti <0.005 ND
n Ce	* Pb <0.110 D	n Rb	n W
n Cs <0.005 ND	* Li <0.005 ND	* Ru <0.005 D	n U
* Cr <0.005 D	n Lu	n Sm	* V <0.005 ND
* Co <0.005 D	* Mg <0.005 ND	n Sc	n Yb
* Cu <0.005 ND	* Mn <0.005 ND	* Se <0.005 ND	n Y
n Dy	* Hg <0.005 ND	* Si <0.005 ND	* Zn <0.005 ND
* Er <0.005 ND	* Mo <0.005 ND	* Ag <0.005 ND	n Zr
* Eu <0.005 ND	n Nd	* Na <0.100 D	
* Gd <0.005 ND	* Ni <0.005 ND	* Sr <0.005 ND	

* - element checked for
 ND – not detected

I – spectral interference
 D – detected

n – not checked for
 s – solution standard element

Density of Solution (measured at 20.00°C ± 0.05°C): 1.0103 g/mL



ISO 9001 Registered Quality System – TUV USA

William J. Leary
 Quality Assurance Manager