



Certificate of Analysis

ULTRAgrade™ Solution
Palladium ICP Standard
10000 µg/mL
(* light sensitive)

Catalog Number: ICP-146
Lot Number: M01221
Job Number: J00013937
Lot Issue Date: 11/16/2011
Expiration Date: 12/31/2018

Starting Material: Palladium Powder
Starting Material Purity: 99.999%
Starting Material Lot No.: BH02034
Matrix: 2% nitric acid in low TOC water (< 50 ppb)
Atomic Weight Pd: 106.4

Certified Value: 10000 ± 20 µg/mL

This Certified Reference Material (CRM) was manufactured and verified in accordance with ULTRA's ISO 9001 registered quality system. The analyte concentrations were verified by our ISO 17025 accredited laboratory to be within ± 2.5%, when 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 3138

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

Trace Metallic Impurities in Solution Standard in µg/mL:

*	Al	<0.020	D	*	Ga	<0.005	ND	n	Nb		n	S			
*	Sb	<0.005	ND	n	Ge			n	Os		n	Ta			
*	As	<0.005	ND	n	Au			s	Pd		n	Te			
*	Ba	<0.005	ND	n	Hf			*	P	<0.005	ND	n	Tb		
*	Be	<0.005	ND	n	Ho			*	Pt	<0.005	ND	*	Tl	<0.005	ND
*	Bi	<0.005	ND	*	In	<0.005	ND	*	K	<0.010	D	n	Th		
*	B	<0.005	ND	n	Ir			n	Pr			n	Tm		
*	Cd	<0.005	ND	*	Fe	<0.005	ND	n	Re			*	Sn	<0.005	ND
*	Ca	<0.010	D	*	La	<0.005	ND	n	Rh			*	Ti	<0.005	ND
n	Ce			*	Pb	<0.005	ND	n	Rb			n	W		
n	Cs			*	Li	<0.005	ND	n	Ru			n	U		
*	Cr	<0.005	ND	n	Lu			n	Sm			*	V	<0.005	ND
*	Co	<0.005	ND	*	Mg	<0.020	D	n	Sc			n	Yb		
*	Cu	<0.020	D	*	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	<0.005	ND				
*	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 22.5°C ± 0.5°C): 1.047 g/mL



ISO 9001 Registered Quality System – TUV USA

William J. Leary
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