



Certificate of Analysis

ULTRAGrade™ Solution
Sulfur ICP Standard
10000 µg/mL

Catalog Number: ICP-116
Lot Number: J00478
Job Number: J00008202
Lot Issue Date: 05/15/2008
Expiration Date: 06/30/2015

Starting Material: Ammonium Sulfate
Starting Material Purity: 99.999%
Starting Material Lot No.: BH00954
Matrix: low TOC water (< 50 ppb)
Atomic Weight S: 32.06

Certified Value: 10012 ± 20 µg/mL

This Certified Reference Material (CRM) was manufactured and verified in accordance with ULTRA's ISO 9001:2000 registered quality system, and the analyte concentrations were verified by our ISO 17025 accredited laboratory. The certified value and uncertainty value, at the 95% confidence level, for each analyte determined gravimetrically.

Classical Wet Assay Method: Theoretical, based on gravimetric measurements

Confirmation by Inductively Coupled Plasma Spectroscopy (ICP / ICP-MS) vs. NIST SRM 3154

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 <0.010 D	* Ga <0.005 ND	n Nb	s S
* Sb <0.005 ND	n Ge	n Os	n Ta
* As <0.005 ND	n Au	n Pd <0.005 ND	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 <0.030 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 <0.010 D
n Ce	* Pb <0.005 ND	n Rb	n W
n Cs	* Li <0.005 ND	n Ru	n U
* Cr <0.010 D	n Lu	n Sm	* V <0.005 ND
* Co <0.005 ND	* Mg <0.010 D	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 <0.010 D
* 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 <0.010 D	

* - element checked for
 ND - not detected

i - spectral interference
 D - detected

n - not checked for
 s - solution standard element

Density of Solution (measured at 21.5°C ± 0.5°C): 1.019 g/mL



ISO 9001 Registered Quality System – TUV USA

William J. Leary
 Quality Assurance Manager