



Certificate of Analysis

ULTRAgrade™ Solution
Manganese ICP Standard
10,000 µg/mL

Catalog Number: ICP-125
Lot Number: IH-0391
Expiration Date: 9/2004

Starting Material: Manganese Nitrate
Starting Material Purity: 99.999%
Starting Material Lot No.: P300A
Matrix: 2% HNO₃
Atomic Weight Mn: 54.94

Certified Value: 10,000 µg/mL

The certified value is the concentration calculated from gravimetric, volumetric, and/or classical wet assay measurements performed during the preparation of the standard unless otherwise specified. The standard uncertainty is $\pm 0.2\%$ relative, unless otherwise specified.

Classical Wet Assay

Method: Theoretical, based on gravimetric measurements

Confirmation by Inductively Coupled

Plasma Spectroscopy (ICP) vs. NIST SRM 3132

Trace Metallic Impurities in Solution Standard in µg/mL:

* Al	<0.03	ND	* Ga	<0.3	ND	n Nb		n S
* Sb	<0.2	ND	n Ge			n Os		n Ta
* As	<0.3	ND	n Au			n Pd		n Te
* Ba	<0.01	ND	n Hf			* P	<0.4	n Tb
* Be	<0.01	ND	n Ho			n Pt		* Tl
* Bi	<0.2	ND	* In	<0.3	ND	* K	<0.7	n Th
* B	<0.03	ND	n Ir			n Pr		n Tm
* Cd	<0.01	ND	* Fe	<0.03	ND	n Re		* Sn
* Ca	<1.0	ND	* La	<0.05	ND	n Rh		* Ti
n Ce			* Pb	<0.2	ND	n Rb		n W
n Cs			* Li	<0.01	ND	n Ru		n U
* Cr	<0.04	ND	n Lu			n Sm		* V
* Co	<0.04	ND	* Mg	<1.0	D	n Sc		n Yb
* Cu	<0.03	ND	s Mn			* Se	<0.4	n Y
n Dy			* Hg	<0.1	ND	* Si	<1.0	* Zn
* Er	<.03	ND	* Mo	<0.04	ND	* Ag	<0.04	n Zr
* Eu	<.03	ND	n Nd			* Na	<0.3	
* Gd	<.03	ND	* Ni	<0.08	ND	* Sr	<0.01	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°C): 1.029 g/mL



ISO 9001 Registered Quality System – TUV USA

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