CERTIFICATE OF ANALYSIS

Agilent Product Name: Pre-Mixed GFAA Matrix Modifier: 750 µg/mL Pd and 500 µg/mL Mg(NO3)2 in 2% HNO3

Agilent Part No: 5190-8340

Lot No: 0009992016

Product Specifications

Analyte	Starting Material	CAS #	Certified Concentration
Pd	Pd	7440-05-03	750.1 ± 3.8 µg/mL
$Mg(NO_3)_2$	Mg	7439-95-4	500.1 ± 2.5 µg/mL

Matrix: 2% HNO_3

Intended Use: This solution is intended for use as a matrix modifier for graphite furnace atomic absorption spectroscopy (GFAA).

Certification & Traceability: This CRM was manufactured under a quality management system that is accredited to **ISO 17034**, **ISO/IEC 17025**, and registered to **ISO 9001**. This CRM was prepared to the nominal concentrations of 750 µg/mL and 500 µg/mL by gravimetric methods using 99.995% pure palladium (Pd) metal and 99.999%pure magnesium (Mg) metal dissolved in high purity nitric acid (HNO_3) and diluted with ASTM Type I Water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against NIST SRMs: 3131a and 3138. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Uncertified Values: Agilent ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

Trace Concentrations (µg/L)

Ag	<0.5	Co	<1	Gd	<0.2	Lu	<0.2	Pd	MAJOR	Se	<2	Tl	<0.5
Al	<2	Cs	<1	Ge	<1	Mg	MAJOR	Pr	<0.2	Sm	<0.2	Tm	<0.2
As	<2	Cr	<1	Hf	<0.2	Mn	<1	Pt	<0.5	Sn	<1	U	<0.5
Au	<0.5	Cu	<2	Hg	<1	Mo	<0.5	Rb	<0.5	Sr	<2	V	<5
B	<5	Dy	<0.2	Ho	<0.2	Nb	<0.5	Re	<0.2	Ta	<0.5	W	<0.5
Ba	<2	Er	<0.2	In	nd	Nd	<0.2	Rh	<0.5	Tb	<0.5	Y	<0.5
Be	<0.5	Eu	<0.2	Ir	<0.5	Ni	<2	Ru	<0.5	Te	<1	Yb	<0.2
Bi	<0.5	Fe	<50	La	<0.5	Os	<1	Sb	<1	Th	<0.5	Zn	<3
Cd	<0.5	Ga	<0.5	Li	<5	Pb	<1	Sc	<5	Ti	<5	Zr	<0.5
Ce	<0.5												

Instructions for Use: Agilent recommends that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy the analyst should: (1) use only pre-cleaned containers and transferware, (2) avoid pipetting directly from the CRM's original container, (3) use a minimum sub-sample size of 500 µL, (4) make dilutions using calibrated balances or certified volumetric class A flasks and pipettes, (5) dilute to volume using the same matrix as the original CRM, and (6) never pour used product back into the original container. The solution should be kept tightly capped. Store at controlled room temperature per USP 35 (10.30.60). Do not freeze, heat, or expose to direct sunlight. Minimize exposure to moisture or high humidity.

Period of Validity: Agilent ensures the accuracy of this solution until the expiration date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Sample lot approver:

Chuck Goudreau, Certifying Officer

Date of release: 1 February 2019
Date of expiration: 8 October 2020

Hazard Information: Refer to the Safety Data Sheet (SDS), which can be obtained at www.agilent.com/chem/sds.

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO 17034 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Further Information: Please contact Agilent for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is:

- Registered to ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. Reg. No. 44 100 16560231)
- Accredited to ISO 17034– General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
    - ISO 17034 references additional requirements specified in ISO Guide 31 and ISO Guide 35.
- Accredited to ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)