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Product Information Sheet

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1.0 ACCREDITATION / REGISTRATION

INORGANIC VENTURES is accredited to ISO 17034, "General Requirements for the Competence of Reference Material Producers" and ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories". Inorganic Ventures is also an ISO 9001 registered manufacturer (QSR Certificate Number QSR-1034).

ACCREDITED Testing Laboratory Certificate 883.01
ACCREDITED Reference Material Producer Certificate 883.02

2.0 PRODUCT DESCRIPTION

Product Code:	Matrix Modifier Solution
Catalog Number:	MM-PD-5
Lot Number:	S2-MM704283
Matrix:	15% v/v HNO3
Value / Analyte(s):	5 000 µg/mL ea:
	Palladium
Starting Material:	Palladium Metal
Starting Material Lot#:	1877, 2191, 2317, 2364
Starting Material Purity:	99.9911%

3.0 PROPERTY VALUES

Nominal Value: 5 000 µg/mL

Density: 1.082 g/mL (measured at 20 ± 4 °C)

Not to be used as a calibration standard, for analytical reagent use only.

4.0 TRACEABILITY TO NIST

- This product is traceable to NIST via an unbroken chain of comparisons. In rare cases where no NIST SRM/RM are available, the term 'in-house std.' is specified.

4.1 Thermometer Calibration

- All thermometers are NIST traceable through thermometers that are calibrated by an accredited calibration laboratory.

4.2 Balance Calibration

- All analytical balances are calibrated by an accredited calibration laboratory and procedure. The weights used for testing are annually compared to master weights and are traceable to NIST.

4.3 Glassware Calibration

- An in-house procedure is used to calibrate all Class A glassware used in the manufacturing and quality control of CRM/RMs.

5.0 TRACE METALLIC IMPURITIES (TMI) DETERMINED BY ICP-MS AND ICP-OES (µg/mL)

CRM/RMs are tested for trace metallic impurities by Axial ICP-OES and ICP-MS. The result from the most sensitive method for each element, is reported below. Solutions tested by ICP-MS were analyzed in an ULPA-Filtered Clean Room. An ULPA-Filter is 99.9985% efficient for the removal of particles down to 0.3 µm.

O	Ag	0.012000	M	Eu	<	0.009600	O	Na	0.370000	M	Se	<	0.036000	O	Zn	0.001800	
M	Al	0.006400	O	Fe		0.006700	M	Nb	<	0.000810	O	Si	0.034000	M	Zr	<	0.012000
M	As	<	0.042000	O	Ga	0.007600	M	Nd	<	0.001900	M	Sm	<	0.003300			
M	Au	<	0.008000	M	Gd	<	0.006600	M	Ni	<	0.021000	M	Sn	<	0.014000		
M	B	<	0.075000	M	Ge	<	0.003100	M	Os	<	0.000800	O	Sr	0.000140			
M	Ba	<	0.012000	M	Hf	<	0.000810	O	P	<	0.071000	M	Ta	<	0.001100		
O	Be	<	0.000460	M	Hg	<	0.005800	M	Pb	<	0.018000	M	Tb	<	0.000810		
M	Bi	<	0.009700	M	Ho	<	0.008100	s	Pd	<		O	Te	<	0.430000		
O	Ca	0.043000	M	In	0.001500	M	Pr	<	0.000810	M	Th	<	0.000810				
M	Cd	0.001100	M	Ir	<	0.013000	O	Pt	0.014000	M	Ti	0.001500					
M	Ce	<	0.003300	O	K	0.027000	M	Rb	0.001500	M	Tl	<	0.000810				
O	Co	0.022000	M	La	<	0.013000	M	Re	0.000460	M	Tm	<	0.000810				
O	Cr	<	0.017000	O	Li	0.001500	M	Rh	0.000330	M	U	<	0.000810				
M	Cs	0.001300	O	Lu	0.001100	M	Ru	<	0.001200	M	V	<	0.003400				
O	Cu	0.003500	O	Mg	0.002900	O	S	0.023000	M	W	<	0.018000					
M	Dy	<	0.000810	O	Mn	0.002100	M	Sb	<	0.016000	M	Y	<	0.000810			
M	Er	<	0.000810	M	Mo	0.004400	M	Sc	<	0.003200	M	Yb	<	0.000810			

M - Checked by ICP-MS O - Checked by ICP-OES i - Spectral Interference
n - Not Checked For s - Solution Standard Element

6.0 INTENDED USE

- Not to be used as a calibration standard, for analytical reagent use only.

7.0 INSTRUCTIONS FOR THE CORRECT USE OF THIS REFERENCE MATERIAL

7.1 Storage and Handling Recommendations

- Store between approximately 4° - 30° C while in sealed TCT bag.

- While stored in the sealed TCT bag, transpiration of this CRM/RM is negligible. After opening the sealed TCT bag transpiration of the CRM/RM will occur, resulting in a gradual increase in the analyte concentration(s). It is the responsibility of the user to account for this effect. When the bottle is weighed both before and after being placed in storage, the mass difference observed will be a measure of transpiration mass loss.

- After opening the sealed TCT bag keep cap tightly sealed when not in use. Store and use at 20° ± 4° C. Do not pippette from the container. Do not return removed aliquots to container.

- For more information, visit **www.inorganicventures.com/TCT**

8.0 HAZARDOUS INFORMATION

- Please refer to the Safety Data Sheet for information regarding this CRM/RM.

9.0 HOMOGENEITY

- This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous. Homogeneity data indicate that the end user should take a minimum sample size of 0.2 mL to assure homogeneity.

10.0 QUALITY STANDARD DOCUMENTATION

10.1 ISO 9001 Quality Management System Registration

- QSR Certificate Number QSR-1034

10.2 ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories"

- Chemical Testing - Accredited / A2LA Certificate Number 883.01

10.3 ISO 17034 "General Requirements for the Competence of Reference Material Producers"

- Reference Material Producer - Accredited / A2LA Certificate Number 883.02

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11.0 ISSUE DATE, LOT EXPIRATION AND PERIOD OF VALIDITY

11.1 Issue Date

- The information is valid provided the CRM/RM is stored and handled in accordance with instructions given in Sec 7.1. This property value is nullified if instructions in Sec 7.1 are not followed or if the CRM/RM is damaged, contaminated, or otherwise modified.

11.2 Lot Expiration Date

- **April 23, 2026**

- The date after which this CRM/RM should not be used.

- The lot expiration date reflects the period of time that the stability of a CRM/RM can be supported by long term stability studies conducted on properly stored and handled CRM/RMs. Lot expiration is limited primarily by transpiration (loss of water from the solution) and infrequently by chemical stability.

11.3 Period of Validity

- This CRM/RM should not be used after the date given in Sec. 11.2. This is contingent upon the CRM/RM being handled and stored in accordance with the instructions given in Sec 7.1.

12.0 NAMES AND SIGNATURES OF CERTIFYING OFFICERS

Certificate Prepared By:

Uyen Truong
Supervisor, Product Documentation

Certificate Approved By:

Michael Booth
Director, Quality Control

Certifying Officer:

Paul Gaines
Chairman / Senior Technical Director