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CERTIFICATE OF ANALYSIS

Product:	Standard Solution of: Palladium (Pd) concentration 1.000 g/l in 5% Hydrochloric Acid (HCl)	Batch 17535301
PA0066		Quality Release Date 01.11.2016
		Expiry Date: 10.2019

Analysis	Batch Value (mg/l)	Specifications (mg/l)
concentration (Pd **)**	**1003.6 ± 5.7** [(a)]	**1000**

Density: 1.029 g/cm^3 at 20 °C

Preparation
This certified reference material is produced in a clean room, using a highest purity starting material, acid from sub-boiling and 0.055 µS/cm deionized water. The low-density polyethylene bottle was decontaminated by leaching with 0.055 µS/cm deionized water and triple rinse.
The instructions of ISO Guide 34 were considered for the preparation of this solution.
Contains: Pd 99.992%

Traceability
This standard is traceable to NIST SRM No 3138 Lot 990207 The certified value was obtained using ICP/OES or ICP/MS calibration according to calibration procedure (a) WQP 5.15.1.1
The calibration curve is drawn using a series of standard solutions prepared from a certified reference material traceable to NIST (SRM) and accredited by laboratories/producers in compliance with ISO/IEC 17025 and/or ISO Guide 34.

Uncertainty
The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor K=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA 4/02

Measurement
Batch value certified at the time of measurement.
The certified value is calculated by means of both gravimetric preparation and ICP-OES analysis.

Hazardous
The normal laboratory safety precautions should be observed when working with this standard.
Please refer to Safety Data Sheet (SDS) to further details.

Homogeneity
This solution was mixed according to an in-house procedure and is guaranteed to be homogeneous.
To ensure sufficient homogeneity of the sample prior to use, mix thoroughly by shaking.

Storage and use
For ICP spectrometer calibration.
If stored unopened in the original packaging, this solution is stable for 3 years from the release date. Shelf life is also limited by the effect of transpiration of solvent through the unopened bottle walls at an average of

<0.1% per year. Once the bottle is opened, keep tightly closed at room temperature in the original packaging.
Do not pipette directly from the bottle. Do not pour the used solution back in the bottle.
This standard can be used directly or can be diluted in an appropriate high-purity matrix.
Obtained concentration (in mg/l) after dilution is a result from the multiplication of certified value of standard concentration and the volume used for dilution and divided into the final volume used for dilution.

We recommend that the material used be leached with acids.
We suggest rejecting the solution six months after opening.

This document is designed and the certified value(s) and uncertainty(ies) are determined in accordance with ISO Guide 31, ISO Guide 35 and Eurachem/CITAC Guides.
The product is produced by laboratory accredited to ISO Guide 34 and ISO/IEC 17025

Signature:  (M. Canet)

This certificate does not release the user from their control upon receipt of the goods. You can get a copy of any of our COA from our website: www.scharlab.com

Trace impurities in the actual solution reported in ppm:
(all values below are nominal and not certified)

Ag	ND	<0.0038	Cu	ND	<0.0009	La	ND	<0.0024	Pt	ND	<0.0097	Tb	ND	<0.022
Al	ND	<0.0018	Dy	ND	<0.0054	Li	ND	<0.0001	Rb	ND	<0.063	Te	ND	<0.031
As	ND	<0.016	Er	ND	<0.0035	Lu	ND	<0.0062	Re	ND	<0.0081	Th	ND	<0.014
Au	ND	<0.016	Eu	ND	<0.0039	Mg	ND	<0.0006	Rh	ND	<0.0038	Ti	ND	<0.0012
B	ND	<0.0078	Fe	D	0.112	Mn	ND	<0.001	Ru	ND	<0.0089	Tl	ND	<0.028
Ba	ND	<0.0005	Ga	ND	<0.020	Mo	ND	<0.0024	S	ND	<0.071	Tm	ND	<0.0023
Be	ND	<0.0001	Gd	ND	<0.0028	Na	D	0.006	Sb	D	0.007	U	ND	<0.45
Bi	D	0.033	Ge	ND	<0.020	Nb	ND	<0.0066	Sc	ND	<0.0016	V	ND	<0.0018
Ca	ND	<0.004	Hf	ND	<0.0032	Nd	ND	<0.0058	Se	ND	<0.023	W	ND	<0.017
Cd	ND	<0.0012	Hg	ND	<0.024	Ni	D	0.018	Si	D	0.06	Y	ND	<0.0007
Ce	ND	<0.0085	Ho	ND	<0.0053	P	ND	<0.048	Sm	ND	<0.0058	Yb	ND	<0.0003
Co	ND	<0.0028	In	ND	<0.098	Pb	ND	<0.021	Sn	ND	<0.050	Zn	D	0.002
Cr	ND	<0.0014	Ir	ND	<0.0061	Pd		*	Sr	ND	<0.00006	Zr	ND	<0.0007
Cs	ND	<0.05	K	ND	<0.0095	Pr	ND	<0.0046	Ta	ND	<0.004			