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CERTIFICATE OF ANALYSIS

Product:	Standard Solution of: Scandium (Sc) concentration 1.000 g/l in 2% Nitric Acid (HNO ₃)	Batch 17375101
ES0021		Quality Release Date 05.08.2016 Expiry Date: 07.2019
Analysis concentration (Sc)	Batch Value (mg/l) 999.5 ± 6.3 ^(a)	Specifications (mg/l) 1000

Density: 1.012 g/cm³ 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 μ S/cm deionized water. The low-density polyethylene bottle was decontaminated by leaching with 0.055 μ S/cm deionized water and triple rinse. The instructions of ISO Guide 34 were considered for the preparation of this solution.

Contains: Sc_2O_3 99.99%

Traceability

This standard is traceable to NIST SRM No 3148a Lot 100701 The certified value was obtained using ICP/OES 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, AAS 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 valu	es be	elow are nomin	al and	d not cer	tified)	_				_						
Ag	ND	<0.007		Cu	ND	<0.0054		La	ND	<0.010		Pr	ND	<0.037	Та	ND	<0.028
AI	ND	<0.047		Dy	ND	<0.010		Li	ND	<0.001		Pt	ND	<0.030	Tb	ND	<0.055
As	ND	<0.080		Er	ND	<0.010		Lu	ND	<0.001		Rb	ND	<0.0001	Te	ND	<0.041
Au	ND	<0.017		Eu	ND	<0.0027		Mg	ND	< 0.0002		Re	ND	< 0.006	Th	ND	<0.065
В	ND	<0.005		Fe	D	0.01		Mn	ND	<0.0016		Rh	ND	<0.060	Ti	ND	<0.0038
Ba	ND	< 0.004		Ga	ND	<0.046		Mo	ND	<0.014		Ru	ND	< 0.030	TI	ND	<0.0001
Be	ND	<0.0007		Gd	ND	<0.014		Na	ND	<0.001		s	ND	<0.005	Tm	ND	< 0.0052
Bi	ND	< 0.034		Ge	ND	<0.048		Nb	ND	<0.036		Sb	ND	<0.0001	U	ND	<0.300
Ca	D	0.031		Hf	ND	<0.015		Nd	ND	<0.187		Sc		*	V	ND	<0.005
Cd	ND	<0.0025		Hg	ND	<0.061		Ni	ND	<0.015		Se	ND	<0.075	W	ND	<0.0055
Ce	ND	<0.060		Ho	ND	<0.0057		Os	ND	<0.080		Si	ND	<0.012	Y	ND	<0.0035
Co	ND	<0.006		In	ND	<0.120		Р	ND	<0.076		Sm	ND	<0.043	Yb	ND	<0.0018
Cr	ND	<0.007		lr	ND	<0.027		Pb	ND	<0.042		Sn	ND	<0.025	Zn	ND	<0.0018
Cs	ND	< 0.0005		K	ND	< 0.0005		Pd	ND	<0.044		Sr	ND	<0.0008	Zr	ND	<0.0077