CERTIFICATE OF ANALYSIS

SPS-SW2 Batch 127

Reference Material for Measurement of Elements in Surface Waters

This Reference Material is intended for daily use in conjunction with measurement of elements in surface waters. The water solution contains 45 elements with concentrations traceable to ultra pure metals or stoichiometrically well-defined substances. The certified values are based on a gravimetric procedure, i.e. weight per volume composition of the primary reference material dissolved in high purity sub-distilled acids. The primary reference materials used in the production have been traced to Standard Reference Materials issued by National Institute of Standards and Technology (USA) by chemical measurements applying inductively coupled plasma atomic emission spectrometry and/or inductively coupled plasma mass spectrometry.

Stability: The certificate is valid for 3 years from the production date (February 3, 2013) provided that the sample solution is kept tightly capped and stored under normal laboratory conditions (less than 30 °C). The solution contains 0.5% nitric acid (W/V).

Element	Concentration in ng/ml (20 °C) [a]	Tracable to NIST SRM	Element	Concentration in ng/ml (20 °C) [a]	Traceable to NIST SRM
Al	250 ± 1	3101a	Na	10000 ± 50	3152a
As	50.0 ± 0.3	3103	Nd	2.50 ± 0.02	3135
B[b]	250	-	Ni	50.0 ± 0.3	3136
Ba	250 ± 1	3104	P	500 ± 3	3139
Ca	10000 ± 50	3109a	Pb	25.0 ± 0.1	3128
Cd	2.50 ± 0.02	3108	Pr	2.50 ± 0.02	3142
Ce	2.50 ± 0.02	3110	Rb	50.0 ± 0.3	3145
Co	10.0 ± 0.05	3113	S	10000 ± 50	3154
Cr	10.0 ± 0.05	3112	Sc	2.50 ± 0.02	3148
Cs	10.0 ± 0.05	3111	Se	10.0 ± 0.05	3149
Cu	100 ± 1	3114	Si	5000 ± 30	3150
Dy	2.50 ± 0.02	3115	Sm	2.50 ± 0.02	3147
Er	2.50 ± 0.02	3116	Sr	250 ± 1	3153
Eu	2.50 ± 0.02	3117	Tb	2.50 ± 0.02	3157
Fe	100 ± 1	3126	Th	2.50 ± 0.02	3159
Gd	2.50 ± 0.02	3118	Tl	2.50 ± 0.02	3158
Ho	2.50 ± 0.02	3123	Tm	2.50 ± 0.02	3160
K	1000 ± 5	3141a	U	2.50 ± 0.02	3164
La	2.50 ± 0.02	3127	V	50.0 ± 0.3	3165
Lu	2.50 ± 0.02	3130	Y	2.50 ± 0.02	3167
Mg	2000 ± 10	3131a	Yb	2.50 ± 0.02	3166
Mn	50.0 ± 0.3	3132	Zn	100 ± 2	3168a
Mo	50.0 ± 0.3	3134			

[a] The uncertainties (half width of the 95 % confidence intervals) listed for the individual elements is based on scientific judgement and represents an estimate of the combined effects of any error, attributed to gravimetric and volumetric procedures, purity of the source material and possible contamination throughout the production steps.
[b] Information value only.

Signature by:

Knut Andersen
Certifying Officer

Oslo, February 4, 2013
Certificate revision 1.0

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