



African Mineral Standards

MATRIX REFERENCE MATERIALS

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AMIS0345

Certified Reference Material

**Uraniferous Alaskite Ore,
Rössing Uranium Mine, Namibia**

Certificate of Analysis

Recommended Concentrations and Limits¹ (at two Standard Deviations)

Certified Concentrations²

U XRF	470	±	44	ppm
Ca M/ICP	1.77	±	0.14	%
Ca XRF	1.84	±	0.037	%
Nb M/ICP	27	±	3	ppm
Specific Gravity	2.69	±	0.07	

Provisional Concentrations

Ta M/ICP	2.3	±	0.4	ppm
U M/ICP	462	±	58	ppm

1. *Manufacturers recommended limits for use of the material as control samples, based on two standard deviations, calculated using "Between Laboratory" statistics for treatment of the data for trivial, non-trivial and technically invalid results. See sections 1, 9 and 12.*
2. *There is additional certified major element data presented on p2 and uncertified trace element data presented as an appendix.*

Major Element Recommended Concentrations and Limits¹ (at two Standard Deviations)

Certified Concentrations

Al ₂ O ₃	13.15	±	0.16	%
BaO	0.021	±	0.002	%
CaO	2.57	±	0.06	%
Fe ₂ O ₃	3.49	±	0.04	%
K ₂ O	4.78	±	0.06	%
MgO	2.94	±	0.06	%
MnO	0.070	±	0.002	%
Na ₂ O	3.16	±	0.06	%
P ₂ O ₅	0.14	±	0.01	%
SiO ₂	66.95	±	0.32	%
TiO ₂	0.49	±	0.02	%
U ₃ O ₈	0.054	±	0.004	%
LOI	1.79	±	0.14	%

Provisional Concentrations

Cr ₂ O ₃	0.05	±	0.01	%
V ₂ O ₅	0.014	±	0.002	%

1. Intended Use: AMIS0345 can be used to check analysis of samples of uraniferous alaskite ores with a similar grade and matrix.

It is a matrix matched Certified Reference Material, fit for use as control samples in routine assay laboratory quality control when inserted within runs of samples and measured in parallel to the unknown. Its purpose is to monitor inter-laboratory or instrument bias and within lab precision. It can be used, indirectly, to establish the traceability of results to an SI system of units.

The recommended concentrations and limits for this material are property values based on a measurement campaign (round robin) and reflect consensus results from the laboratories that participated in the round robin.

Slight variations in analytical procedures between laboratories will reflect as slight biases to the recommended concentrations (see 19). Good laboratories will report results within the two standard deviation levels with a failure rate of <10 %.

The material can also be used for method development and for the calibration of equipment.

2. Origin of Material: AMIS0345 was supplied by Rio Tinto Limited from their Rössing Uranium Mine situated 70km north-east of Swakopmund in Namibia. The uranium mineralisation is associated with Neoproterozoic Damara Orogen syntactic alaskitic granites that display concordant, discordant and replacement relationships to the heavily folded host gneisses, marbles and limestones of the Khan and Rössing Formations.

3. Mineral and Chemical Composition: The uranium bearing minerals are mainly uraninite and its alteration products, and minor betafite.

¹ ICP data converted to Oxides.

4. **Appearance:** The material is a very fine Light Grey powder (Corstor 5Y 7/1).

5. **Handling instructions:** The material is packaged in Laboratory Packs and Explorer Packs that must be shaken or otherwise agitated before use. Normal safety precautions for handling fine particulate matter are suggested, such as the use of safety glasses, breathing protection, gloves and a laboratory coat.

6. **Method of Preparation:** The material was crushed, dry-milled and air-classified to <54µm. Wet sieve particle size analysis of random samples confirmed the material was 98.5% <54µm. It was then blended in a bi-conical mixer, systematically divided and then sealed into 1kg Laboratory Packs. Explorer Packs are subdivided from the Laboratory packs as required. Samples were randomly selected for homogeneity testing and third party analysis. Statistical analysis of both homogeneity and consensus test results were carried out by an independent statisticians.

7. **Methods of Analysis requested:**

1. Multi-acid digest, including HF, ICP- OES or ICP-MS. Multi element scan to include U.
2. U – XRF.
3. Majors (Al₂O₃, CaO, Cr₂O₃, Fe₂O₃, K₂O, MgO, MnO, Na₂O, SiO₂, TiO₂.) XRF fusion.
4. LOI.
5. SG – Gas Pycnometer.

8. **Information requested:**

1. State aliquots used for all determinations.
2. Report all results for U in ppm.
3. All results for major elements to be reported as oxides in percentages.
4. All results for multi-element scans to be reported in ppm.
5. Report all QC data, to include replicates, blanks and certified reference materials used.
6. State and provide brief description of analytical techniques used.

9. **Method of Certification:** Twenty five laboratories were each given eight randomly selected packages of sample. Nineteen of the laboratories submitted results.

Final limits were calculated after first determining if all data was compatible within a spread normally expected for similar analytical methods done by reputable laboratories. Data from any one laboratory was then removed from further calculations when the mean of all analyses from that laboratory failed a “t test” of the global means of the other laboratories. The means and standard deviations were then re-calculated using all remaining data. Any analysis that fell outside of the new two standard deviations was removed from the ensuing data base. The mean and standard deviations were again calculated using the remaining data.

The “between-laboratory” standard deviation is used in the calculation to eliminate technically and statistically invalid data. Upper and lower limits are based on the standard deviation of the remaining data, which reflect individual analyses and can be used to monitor accuracy in routine laboratory quality control. This is different to limits based on standard deviations derived from grouped set of analyses (see 12), which provide important measures for precision and trueness, but which are less useful for routine QC.

Standards with an RSD of near or less than 5 % are termed “Certified”, RSD’s of between near 5 % and 15 % are termed “Provisional”, and RSD’s over 15 % are termed “Informational”.

10. **Participating Laboratories:** The 19 out of 25 laboratories that provided results timeously were (not in same order as in the table of assays):

1. ACME Analytical Laboratories Ltd CA
2. Activation Laboratories Pty Ltd (ActLabs) CA
3. ALS Ammtec (Australia)

4. ALS Chemex Laboratory Group Brisbane Australia
5. ALS Chemex Laboratory Group Johannesburg SA
6. ALS Chemex Laboratory Group Perth WA
7. ALS OMAC (Ireland)
8. Chromatech Services
9. Genalysis Laboratory Services (W Australia P)
10. Performance Laboratories FS (Allanridge)
11. Performance Laboratories SA (Randfontein)
12. Rossing Uranium Limited
13. Set Point Laboratories (Isando) SA
14. SGS Australia Pty Ltd (Newburn) WA
15. SGS Geosol Laboratories Ltda (Brazil)
16. SGS Mineral Services Lakefield (Canada)
17. SGS Toronto (Canada)
18. SGS Vancouver (Canada)
19. Ultra Trace (Pty) Ltd WA

11. Assay Data: Data as received from the laboratories for the important certified elements listed on p1 are set out below.

Lab Code	U M/ICP ppm	U XRF ppm	Ca M/ICP ppm	Ca XRF ppm	Nb M/ICP ppm	Ta M/ICP ppm	Al2O3 XRF %	BaO XRF %	CaO XRF %	Cr2O3 XRF %	Fe2O3 XRF %	K2O XRF %	MgO XRF %	MnO XRF %	Na2O XRF %	P2O5 XRF %	SiO2 XRF %	TiO2 XRF %	U3O8 XRF %	V2O5 XRF %	LOI XRF %	SG %	
A		491																					
A		490																					
A		488																					
A		485																					
A		489																					
A		492																					
A		486																					
A		489																					
B		432		18733			13.2		2.62	0.08		4.79	2.77	0.07		0.16	66.6	0.51	0.05		2.33	2.70	
B		437		18376			13.1		2.57	0.06		4.75	2.74	0.07		0.16	67.0	0.50	0.05		2.29	2.71	
B		439		18447			13.2		2.58	0.06		4.80	2.77	0.07		0.16	66.6	0.50	0.05		2.33	2.68	
B		438		18662			13.2		2.61	0.06		4.79	2.76	0.07		0.16	66.8	0.51	0.05		2.33	2.70	
B		438		18447			13.4		2.58	0.06		4.74	2.80	0.07		0.16	66.2	0.50	0.05		2.36	2.69	
B		439		18733			13.4		2.62	0.06		4.78	2.82	0.07		0.16	67.1	0.51	0.05		2.32	2.72	
B		436		18519			13.3		2.59	0.06		4.78	2.78	0.07		0.16	66.5	0.50	0.05		2.36	2.70	
B		441		18590			13.0		2.60	0.08		4.76	2.73	0.07		0.16	66.9	0.51	0.05		2.31	2.69	
C	464	460		18733			13.1		2.62	0.05	3.50	4.79	2.93	0.07	3.13	0.15	67.2	0.49		0.02			
C	476	470		18590			13.1		2.60	0.05	3.48	4.77	2.92	0.07	3.12	0.14	66.8	0.49		0.02			
C	470	480		18733			13.1		2.62	0.05	3.49	4.78	2.94	0.07	3.16	0.14	67.1	0.49		0.01			
C	464	470		18733			13.1		2.62	0.07	3.51	4.79	2.94	0.07	3.13	0.14	67.1	0.49		0.02			
C	460	460		18519			13.1		2.59	0.06	3.49	4.77	2.91	0.07	3.12	0.14	66.9	0.49		0.02			
C	448	470		18590			13.1		2.60	0.06	3.47	4.78	2.90	0.07	3.12	0.14	66.8	0.49		0.01			
C	452	490		18662			13.1		2.61	0.05	3.49	4.79	2.93	0.07	3.12	0.14	67.0	0.49		0.02			
C	452	420		18662			13.1		2.61	0.05	3.48	4.79	2.92	0.07	3.14	0.15	67.0	0.49		0.02			
E	411	608	16100	18376	28.5	2.50	13.2	0.02	2.57	0.05	3.48	4.67	3.01	0.07	3.18	0.13	66.8	0.46		0.01	1.80	2.67	
E	434	603	16900	18233	26.6	2.40	13.1	0.02	2.55	0.06	3.45	4.68	3.00	0.07	3.17	0.13	66.4	0.46		0.01	1.81	2.69	
E	443	603	16200	18233	25.2	2.30	13.1	0.02	2.55	0.06	3.45	4.75	3.02	0.07	3.23	0.13	66.6	0.48		0.01	1.81	2.67	
E	407	603	15800	18161	26.5	2.30	13.1	0.02	2.54	0.05	3.42	4.77	3.01	0.07	3.23	0.13	66.4	0.49		0.01	1.81	2.67	
E	431	609	16800	18090	26.8	2.30	13.1	0.02	2.53	0.05	3.45	4.79	2.98	0.07	3.20	0.13	66.3	0.48		0.02	1.81	2.67	
E	435	602	17000	18233	27.6	2.30	13.0	0.02	2.55	0.05	3.47	4.65	2.99	0.07	3.16	0.13	66.2	0.47		0.02	1.81	2.65	
E	438	607	16400	18090	27.7	2.30	13.0	0.02	2.53	0.05	3.45	4.74	2.96	0.08	3.14	0.13	65.9	0.47		0.01	1.81	2.65	
E	432	600	16300	18376	26.8	2.40	13.2	0.02	2.57	0.05	3.46	4.75	3.03	0.07	3.23	0.13	66.8	0.47		0.02	1.81	2.67	
F	496		17593	18304	26.8	2.21	13.3	0.02	2.56	0.05	3.52	4.82	2.96	0.07	3.25	0.14	67.1	0.50		0.01	1.80	2.77	
F	494		18285	18304	27.0	2.23	13.3	0.02	2.56	0.05	3.51	4.82	2.95	0.07	3.22	0.14	67.0	0.50		0.01	1.78	2.73	
F	484		18130	18304	26.2	2.12	13.2	0.02	2.56	0.05	3.51	4.80	2.95	0.07	3.21	0.14	67.1	0.50		0.01	1.81	2.77	
F	491		17670	18304	26.7	2.18	13.2	0.02	2.56	0.05	3.51	4.79	2.95	0.07	3.21	0.14	67.1	0.50		0.01	1.77	2.74	
F	487		18090	18304	26.2	2.14	13.2	0.02	2.56	0.05	3.51	4.79	2.96	0.07	3.22	0.14	67.1	0.50		0.01	1.77	2.73	
F	491		17912	18304	26.4	2.20	13.3	0.02	2.56	0.05	3.51	4.81	2.94	0.07	3.22	0.14	67.0	0.50		0.01	1.80	2.75	
F	488		17846	18376	26.1	2.14	13.2	0.02	2.57	0.05	3.52	4.79	2.94	0.07	3.22	0.14	67.1	0.50		0.01	1.77	2.74	
F	485		18271	18304	26.3	2.13	13.2	0.02	2.56	0.05	3.51	4.79	2.94	0.07	3.20	0.14	67.0	0.50		0.01	1.76	2.78	
G	476	455	17400	18304	29.0	2.99	13.1	0.02	2.56	0.05	3.48	4.80	2.94	0.08	3.20	0.14	67.1	0.49		0.01	1.75		
G	487	449	19500	18376	27.4	3.00	13.1	0.02	2.57	0.05	3.51	4.79	2.95	0.08	3.16	0.14	67.0	0.49		0.02	1.74		
G	478	443	19800	18376	29.3	3.09	13.1	0.02	2.57	0.05	3.50	4.80	2.97	0.08	3.17	0.14	67.0	0.49		0.02	1.75		
G	495	448	17900	18304	29.8	2.80	13.1	0.02	2.56	0.05	3.51	4.78	2.95	0.08	3.19	0.13	67.0	0.50		0.01	1.74		
G	500	438	20100	18233	28.1	2.98	13.2	0.02	2.55	0.05	3.49	4.82	2.92	0.08	3.16	0.14	67.1	0.49		0.02	1.76		
G	464	441	19300	18233	28.9	2.95	13.1	0.02	2.55	0.05	3.47	4.80	2.93	0.07	3.22	0.14	67.0	0.49		0.02	1.77		
G	495	449	18800	18304	29.1	2.95	13.1	0.02	2.56	0.05	3.49	4.79	2.96	0.08	3.22	0.14	67.0	0.49		0.02	1.76		
G	494	446	18000	18304	28.3	3.16	13.2	0.02	2.56	0.05	3.49	4.78	2.96	0.07	3.17	0.13	67.0	0.49		0.01	1.76		
H	450		18400	18447	27.3	2.28	13.1	0.02	2.58	0.05	3.50	4.77	2.93	0.07	3.18	0.14	67.1	0.49		0.01	1.71	2.55	
H	430		18000	18376	27.0	2.21	13.2	0.02	2.57	0.05	3.48	4.77	2.93	0.07	3.19	0.14	67.1	0.49		0.01	1.70	2.56	
H	430		17700	18376	25.9	2.24	13.1	0.02	2.57	0.05	3.48	4.78	2.93	0.07	3.18	0.13	67.2	0.48		0.01	1.66	2.55	
H	421		17600	18376	26.2	2.21	13.2	0.02	2.57	0.05	3.48	4.77	2.92	0.07	3.18	0.13	67.2	0.48		0.01	1.69	2.56	
H	411		18300	18376	26.9	2.30	13.1	0.02	2.57	0.06	3.50	4.77	2.93	0.07	3.18	0.14	67.1	0.49		0.01	1.65	2.58	
H	402		17700	18376	26.6	2.32	13.2	0.02	2.57	0.06	3.48	4.77	2.93	0.07	3.18	0.14	67.1	0.49		0.01	1.69	2.54	
H	410		17900	18376	26.0	2.29	13.1	0.02	2.57	0.05	3.49	4.77	2.92	0.07	3.19	0.14	67.1	0.48		0.01	1.70	2.57	
H	440		17500	18447	26.6	2.22	13.2	0.02	2.58	0.05	3.48	4.78	2.93	0.07	3.19	0.13	67.1	0.49		0.01	1.68	2.58	
I	422	517	17400	18497	28.4	2.28	13.2	0.02	2.59	0.05	3.49	4.77	2.98	0.07	3.11		67.0	0.50		0.01	1.86		
I	428	515	17500	18426	25.8	1.66	13.3	0.02	2.58	0.04	3.52	4.82	2.98	0.07	3.13		66.9	0.48		0.01	1.88		
I	435	525	17400	18376	29.0	1.90	13.2	0.02	2.57	0.05	3.48	4.74	2.95	0.07	3.17		66.7	0.48		0.01	1.88		
I	439	532	17500	18576	30.0	1.94	13.3	0.02	2.60	0.04	3.51	4.77	2.93	0.07	3.15		67.2	0.48		0.01	1.82		
I	449	504	18000	18261	30.0	2.19	13.2	0.02	2.55	0.04	3.52	4.76	2.94	0.07	3.10		67.0	0.51		0.01	1.86		
I	426	527	17200	18390	27.5	2.07	13.2	0.02	2.57	0.04	3.49	4.75	2.96	0.07	3.13		66.7	0.50		0.01	1.88		
I	436	510	17200	18261	26.6	1.79	13.3	0.02	2.55	0.04	3.46	4.77	2.96	0.07	3.11		66.9	0.51		0.01	2.02		
I	431	536	17500	18211	31.8	2.71	13.2	0.02	2.55	0.05	3.45	4.72	2.95	0.07	3.10		66.3	0.48		0.01	1.91		
K	463	493		18304	19.9	1.80	13.2		2.56	0.06	3.50	4.73	2.96	0.07	3.14	0.14	66.8	0.50	0.06	0.02	2.66	2.66	
K																							

Analyte	Method	unit	S ¹	σ_L ²	Sw ³	CSU ⁴
U	M/ICP	ppm	28.9	21.1	12.5	5.98
U	XRF	ppm	21.8	16.9	5.20	4.71
Ca	M/ICP	ppm	704	537	330	166
Ca	XRF	ppm	184	138	82.8	40.8
Nb	M/ICP	ppm	1.33	1.00	0.75	0.33
Ta	M/ICP	ppm	0.20	0.15	0.10	0.05
Al ₂ O ₃	XRF	%	0.080	0.050	0.054	0.015
BaO	XRF	%	0.001	0.001	0.001	0.000
CaO	XRF	%	0.026	0.019	0.012	0.006
Cr ₂ O ₃	XRF	%	0.004	0.003	0.003	0.001
Fe ₂ O ₃	XRF	%	0.020	0.013	0.015	0.004
K ₂ O	XRF	%	0.026	0.014	0.020	0.005
MgO	XRF	%	0.027	0.021	0.015	0.007
MnO	XRF	%	0.001	0.000	0.001	0.000
Na ₂ O	XRF	%	0.032	0.023	0.019	0.007
P ₂ O ₅	XRF	%	0.004	0.003	0.003	0.001
SiO ₂	XRF	%	0.162	0.103	0.116	0.035
TiO ₂	XRF	%	0.008	0.005	0.005	0.002
U ₃ O ₈	XRF	%	0.002	0.003	0.001	0.002
V ₂ O ₅	XRF	%	0.001	0.001	0.001	0.000
LOI	XRF	%	0.066	0.065	0.032	0.025
SG		%	0.034	0.027	0.018	0.009

1. S - Std Dev for use on control charts.
2. σ_L - Betw Lab Std Dev, for use to calculate a measure of accuracy.
3. Sw - Within Lab Stc Dev, for use to calculate a measure of precision.
4. CSU - Combined Standard Uncertainty, a component for use to calculate the total uncertainty in method validation.

13. Uncertified values: The Certified, Provisional and Indicated values listed on p1 and p2 of this certificate fulfill the AMIS statistical criteria regarding agreement for certification and have been independently validated by Dr Barry Smee.

14. Metrological Traceability: The values quoted herein are based on the consensus values derived from statistical analysis of the data from an inter laboratory measurement program. Traceability to SI units is via the standards used by the individual laboratories, the majority of which are accredited, who have maintained measurement traceability during the analytical process.

15. Certification: AMIS0345 is a new material.

16. Period of validity: The certified values are valid for this product, while still sealed in its original packaging, until notification to the contrary. The stability of the material will be subject to continuous testing for the duration of the inventory. Should product stability become an issue, all customers will be notified and notification to that effect will be placed on the www.amis.co.za website.

17. Minimum sample size: The majority of laboratories reporting used a 0.5g sample size for the ICP and a 30g sample size for the fire assay. These are the recommended minimum sample sizes for the use of this material.

18. Availability: This product is available in Laboratory Packs containing 1kg of material and Explorer Packs containing custom weights (from 50g to 250g) of material. The Laboratory Packs are sealed bottles delivered in sealed foil pouches. The Explorer Packs contain material in standard geochem envelopes, vacuum sealed in foil pouches.

19. Recommended use: The data used to characterize this CRM has been scrutinized using outlier treatment techniques. This, together with the number of participating laboratories, should overcome any "inter-laboratory issues" and should lead to a very accurate measure for the given methods, notwithstanding the underlying assumption that what the good inter-laboratory labs reported was accurate. However an amount of bad data might have had an effect, resulting in limits which in some situations might be too broad for the effective monitoring of a single analytical method, laboratory or production process. Users should set their own limits based on their own data quality objectives and control measurements, after determining the performance characteristics of their own particular method, using a minimum of 20 analyses using this CRM. User set limits should normally be within the limits recommended on p1 and 2 of this certificate.

20. Legal Notice: This certificate and the reference material described in it have been prepared with due care and attention. However AMIS, Set Point Technology (Pty) Ltd, Mike McWha, Dr Barry Smee and Smee and Associates Ltd; accept no liability for any decisions or actions taken following the use of the reference material.

10 December 2012

Certifying Officers:



African Mineral Standards: _____

Mike McWha
BSc (Hons), FGSSA, MAusIMM, Pr.Sci.Nat



Geochemist: _____

Barry W. Smee
BSc, PhD, P.Geo, (B.C.)

Appendix. – Uncertified trace element statistics

Analyte	Method	Unit	Mean	2SD	RSD%	n
Ag	M/ICP	ppm	0.14	0.09	32.8	58
Al	M/ICP	%	6.67	0.61	4.55	96
As	M/ICP	ppm	5.89	2.06	17.5	85
Ba	M/ICP	ppm	191	16.2	4.24	90
Be	M/ICP	ppm	2.74	0.63	11.5	89
Bi	M/ICP	ppm	0.43	0.11	12.5	90
Cd	M/ICP	ppm	0.04	0.04	54.4	40
Ce	M/ICP	ppm	64.3	6.94	5.40	82
Co	M/ICP	ppm	13.6	1.91	7.04	100
Cr	M/ICP	ppm	234	109	23.3	96
Cs	M/ICP	ppm	4.74	0.48	5.05	66
Cu	M/ICP	ppm	64.8	6.48	5.01	93
Dy	M/ICP	ppm	8.67	1.47	8.49	24
Er	M/ICP	ppm	5.77	0.72	6.22	21
Eu	M/ICP	ppm	0.73	0.08	5.51	22
Fe	M/ICP	%	2.36	0.20	4.22	99
Ga	M/ICP	ppm	19.4	2.57	6.64	82
Gd	M/ICP	ppm	5.92	0.79	6.70	24
Ge	M/ICP	ppm	0.52	1.24	120	45
Hf	M/ICP	ppm	2.48	0.68	13.7	90
Ho	M/ICP	ppm	1.80	0.35	9.82	24
In	M/ICP	ppm	0.03	0.01	23.0	72
K	M/ICP	%	3.81	0.39	5.09	80
La	M/ICP	ppm	31.9	3.42	5.37	83
Li	M/ICP	ppm	32.2	3.33	5.16	90
Lu	M/ICP	ppm	0.95	0.13	6.67	45
Mg	M/ICP	%	1.68	0.17	5.07	107
Mn	M/ICP	ppm	541	41.5	3.84	104
Mo	M/ICP	ppm	6.93	0.84	6.04	91
Na	M/ICP	%	2.33	0.17	3.64	106
Nd	M/ICP	ppm	25.2	2.99	5.93	22
Ni	M/ICP	ppm	66.1	11.0	8.33	110
P	M/ICP	ppm	594	85.6	7.21	97
Pb	M/ICP	ppm	53.6	11.4	10.6	96
Pr	M/ICP	ppm	7.24	0.61	4.18	22
Rb	M/ICP	ppm	297	84.8	14.3	88
Re	M/ICP	ppm	0.01	0.01	54.0	31
S	M/ICP	%	0.10	0.02	7.67	76
S Comb	LECO	%	0.10	0.00	1.91	20
Sb	M/ICP	ppm	27.0	3.62	6.70	91
Sc	M/ICP	ppm	7.41	1.08	7.29	86
Se	M/ICP	ppm	1.66	0.84	25.2	29
Si	M/ICP	%	31.3	0.29	0.47	7
Sm	M/ICP	ppm	5.86	0.60	5.10	23
Sn	M/ICP	ppm	6.62	0.89	6.73	92
Sr	M/ICP	ppm	110	13.38	6.08	98
Tb	M/ICP	ppm	1.23	0.19	7.77	48
Te	M/ICP	ppm	0.06	0.03	26.1	23
Th	M/ICP	ppm	55.4	4.57	4.13	90
Ti	M/ICP	%	0.29	0.02	3.76	94
Tl	M/ICP	ppm	1.17	0.25	10.6	89
Tm	M/ICP	ppm	0.98	0.18	9.15	22
V	M/ICP	ppm	79.4	9.53	6.00	100
W	M/ICP	ppm	8.18	1.86	11.4	89
Y	M/ICP	ppm	46.5	8.08	8.68	93
Yb	M/ICP	ppm	6.93	0.88	6.34	46
Zn	M/ICP	ppm	32.7	6.75	10.3	100
Zr	M/ICP	ppm	73.0	20.2	13.9	92