myStandards GmbH
Schauenburger Straße 116
24118 Kiel
Germany

Assigned Values for Pressed Powder Pellets

OREAS-147*-P

Assigned Values

Analyte	Value	Unc. (95% CL)	Unit	Method
Li	0.227	0.008	g/100g	A, C
Be	33.7	4.2	ppm	A, C
Na	0.960	0.028	g/100g	B, C
Mg	0.549	0.011	g/100g	A
Al	4.98	0.12	g/100g	A, B, C
Si	35.63	0.58	g/100g	A, B
P	0.157	0.007	g/100g	A, B, C
S	0.030	0.001	g/100g	C
K	1.62	0.03	g/100g	A, B, C
Ca	1.11	0.03	g/100g	A, B, C
Sc	10.7	0.4	ppm	C
Ti	0.479	0.013	g/100g	A, B, C
V	62	4	ppm	A, C
Cr	63	9	ppm	A, C
Mn	0.039	0.001	g/100g	A, B, C
Fe	3.25	0.07	g/100g	A, B, C
Co	6.90	0.19	ppm	C
Ni	21.2	0.6	ppm	C
Cu	299	13	ppm	A, C
Zn	140	8	ppm	A, C
Ga	22.3	3.2	ppm	A, C
Ge	0.75	0.17	ppm	C
As	36.0	2.8	ppm	A, C
Rb	1173	83	ppm	A, C
Sr	291	27	ppm	A, B
Y	26.9	1.3	ppm	A, C
Zr	197	45	ppm	A, B
Nb	0.115	0.008	g/100g	A, B, C

Assigned Values

Analyte	Value	Unc. (95% CL)	Unit	Method
Mo	8.79	1.39	ppm	A, C
In	2.73	0.21	ppm	A, C
Sn	699	23	ppm	A
Sb	10.5	0.7	ppm	A, C
Cs	236	11	ppm	A, C
Ba	1948	77	ppm	A, B, C
La	681	36	ppm	A, C
Ce	1152	100	ppm	A, C
Pr	121	2	ppm	A, C
Nd	379	14	ppm	A
Sm	48.3	3.1	ppm	A, C
Eu	10.3	1.0	ppm	A, C
Gd	23.0	4.3	ppm	A, C
Tb	2.32	0.30	ppm	A, C
Dy	8.86	1.34	ppm	A, C
Ho	1.33	0.13	ppm	A
Er	2.90	0.48	ppm	A, C
Tm	0.30	0.07	ppm	A, C
Yb	1.54	0.14	ppm	A, C
Lu	0.20	0.01	ppm	C
Hf	4.22	1.53	ppm	A, C
Ta	17.8	2.9	ppm	A, C
Tl	10.8	0.8	ppm	A, C
Pb	27.8	1.0	ppm	C
Bi	12.5	1.0	ppm	A, C
Th	94	4	ppm	A, C
U	15.8	0.3	ppm	C

*The original manufacturer (OREAS) is not liable for any issues occurring from the use of this material since they took no part in the manufacturing of the pellets.

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The assigned values are the present best estimates of the true content for each element in the original powder. They are based on the evaluation and combination of the respective certified values given for different analytical methods in the original certificate of analysis and represent the mean of means.

The uncertainty is based on the standard error between the method specific values given in the original certificate as well as each respective method specific confidence interval at the 95 % level. If a value, originates from only one method the original 95 % confidence interval is reported as its uncertainty.

Detailed information and background data can be found in the original certificate of analysis and corresponding data package issued by OREAS. The information was retrieved on 07.10.2022.

Calculation Example:

Original OREAS Mean Values for Aluminium (Al):

Borate Fusion XRF	8.02 g/100 g	0.03 g/100 g CL @ 95 %
Peroxide / Borate Fusion ICP	7.81 g/100 g	0.08 g/100 g CL @ 95 %
Four acid digestion	8.02 g/100 g	0.47 g/100 g CL @ 95 %

Mean of Means	7.95 g/100 g
Standard Error	0.07 g/100 g

Error Propagation Final Uncertainty $\sqrt{0.07^2 + 0.03^2 + 0.08^2 + 0.47^2} = 0.48$ (1)

Final Value	7.95 g/100 g
Uncertainty	0.48 g/100 g

List of analytical methods used for calculation of the mean of means:

A Peroxide fusion for full ICP-OES and ICP-MS elemental suites
B Lithium borate fusion with XRF finish (whole rock package)
C Four acid digestion for full ICP-OES and ICP-MS or AAS elemental suites

Please note that only full to nearly full dissolution methods were considered in the calculation. An example of nearly full dissolution would be a so-called four acid digestion, which is capable of dissolving most minerals, but not all. The methods considered are given for each analyte, the nearly full dissolution methods, e.g. the four acid digestion, were only included into the calculation of the final value when in statistical agreement with the full dissolution values.

Document History

Version	*Date*	*Changes applied*
1.0	14.07.2023	First publication