GEOSTATS PTY LTD

Mining Industry Consultants
Reference Material Manufacture and Sales

Certified Geochem Base Metal Reference Material Product Code

GBM916-2

Certified Control Values

Total Digest

Element	Grade	Standard Deviation	Num of Analyses	Confidence Interval
Nickel (ppm)	223	10	65	+/- 2.4
Copper (ppm)	1675	58	75	+/- 13.4
Zinc (ppm)	8792	321	70	+/- 77.1
Lead (ppm)	1335	52	68	+/- 12.6
Arsenic (ppm)	72	6	56	+/- 1.6
Cobalt (ppm)	10	1	59	+/- 0.3
Silver (ppm)	29.0	1.4	71	+/- 0.33

Partial Digest

Element	Grade	Standard Deviation	Num of Analyses	Confidence Interval
Nickel (ppm)	225	15	65	+/- 3.8
Copper (ppm)	1704	68	87	+/- 14.6
Zinc (ppm)	8742	321	64	+/- 80.8
Lead (ppm)	1335	70	71	+/- 16.7
Arsenic (ppm)	69	6	59	+/- 1.6
Cobalt (ppm)	10	1	54	+/- 0.2
Silver (ppm)	28.6	1.4	78	+/- 0.32

CRM Details

Control Statistic Details

Control statistics were produced from results accumulated in the October-2016 round robin. The number of results used to certify each analyte is shown in the table above.

Material Description

This material is described as a Zn / Cu / Ag Oxide ex Armenia.

Colour Designation (ISCC-NBS, SP440)

This material is yellowish gray in colour.

Usage

This product is for use in the mining industry as a reference material for monitoring and testing the accuracy of laboratory assaying.

Preparation and Packaging

All CRMs are dried in an oven for a minimum of 12 hours at 110°C. The dry material is then pulverised to better than 75 micron (nominal mean of 45 micron) using an air classifier. The material is then homogenised and stored in a sealed, stable container ready for final packaging.

Materials are statistically sampled from stores, then packaged into either heat sealed, air tight, plastic pulp packets or screw top sealed plastic containers ready for distribution. All packaging has been chosen to ensure minimal contamination from outside sources during shipment, use and storage.

Assay Testwork

All standards are tested thoroughly in the Geostats bi-annual laboratory survey. This involves assaying by multiple laboratories from around the world. Results are compiled into a comprehensive report detailing statistics for each standard. Assay distributions are checked and processed statistically, producing monitoring statistics for these standards. Materials are tested regularly to ensure stability and homogeneity.

Stability

This product remains stable in its original packaging, away from direct sunlight.

Material Safety

This product is not hazardous and non-toxic.

Neutron Activation Analysis Results (ppm, unless otherwise noted)	
Antimony	10.8
Arsenic	74.5
Barium	80.4
Bromine	<2
Cadmium	69.1
Caesium	1
Calcium (%)	nr
Cerium	<10
Chromium	<20
Cobalt	11
Europium	<0.507
Gold (ppb)	1420
Hafnium	<5
Iridium (ppb)	<50
Iron (%)	4.9
Lanthanum	2.56
Lutetium	0.14
Mercury	nr
Molybdenum	<10
Neodymium	nr
Nickel	240
Potassium (%)	nr
Rubidium	28
Samarium	0.9
Scandium	18.7
Selenium	<10
Silver	31
Sodium (%)	0.981
Strontium	nr
Tantalum	<2
Tellurium	<20
Terbium	<1
Thorium	<0.5
Tin	<200
Tungsten	<5
Uranium	<1
Ytterbium	0.663
Zinc	9000
Zirconium	<500

Major Elements by Fusion / XRF (%)	
Fe	nr
SiO_2	nr
Al_2O_3	nr
TiO_2	nr
MnO	nr
CaO	nr
P	nr
S	nr
MgO	nr
K_2O	nr
Na_2O	nr
LOI1000	nr

Neutron Activation Analyses and Fusion / XRF Analyses are single results and are indicative only. These are provided for matrix identification purposes.

'nr': Not Reported

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