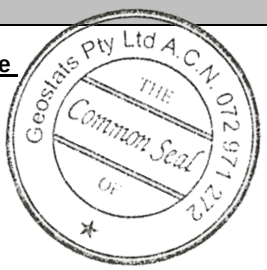
GEOSTATS PTY LTD

Mining Industry Consultants
Reference Material Manufacture and Sales

Certified Ore Grade Base Metal Reference Material Product Code

GBM919-12



Certified Control Values

Element	Grade	Standard Deviation	Num of Analyses	Confidence Interval
Nickel (ppm)	48	9	87	+/- 2
Copper (ppm)	7274	291	164	+/- 37
Zinc (ppm)	16668	817	146	+/- 122
Lead (ppm)	206	21	121	+/- 4
Cobalt (ppm)	nr	nr	nr	nr
Silver (ppm)	5.3	0.5	80	+/- 0.21
Sulphur (%)	23.18	0.80	113	+/- 0.16

CRM Details

Control Statistic Details

Control statistics were produced from results accumulated in the April-2007, October-2019 round robins. The number of results used to certify each analyte is shown in the table above.

Material Description

This material is described as a Zinc Sulphide Ore.

Colour Designation (ISCC-NBS, SP440)

This material is olive 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	2.3
Arsenic	173.5
Barium	<50
Bromine	<0.5
Cadmium	70
Caesium	1.6
Calcium (%)	nr
Cerium	20.5
Chromium	<20
Cobalt	287.5
Europium	0.4
Gold (ppb)	189.5
Hafnium	1
Iridium (ppb)	<50
Iron (%)	31.4
Lanthanum	6.5
Lutetium	0.2
Mercury	nr
Molybdenum	<1
Neodymium	nr
Nickel	53.5
Potassium (%)	nr
Rubidium	<11
Samarium	2.3
Scandium	10.75
Selenium	210.5
Silver	6.35
Sodium (%)	0.142
Strontium	nr
Tantalum	<0.5
Tellurium	<13
Terbium	<0.5
Thorium	1
Tin	<100
Tungsten	<2
Uranium	1.75
Ytterbium	1.2
Zinc	17250
Zirconium	<200

Major Elements by Fusion / XRF (%)	
Fe	28.1
SiO_2	18.93
Al_2O_3	4.69
TiO_2	0.26
MnO	0.1
CaO	0.83
P	0.021
S	21.84
MgO	3.76
K_2O	0.22
Na_2O	0.23
LOI1000	27.8

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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