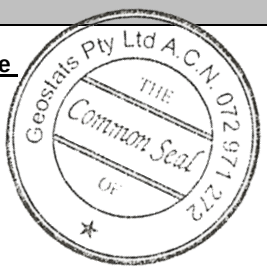
GEOSTATS PTY LTD

Mining Industry Consultants
Reference Material Manufacture and Sales

Certified Ore Grade Base Metal Reference Material Product Code

GBM322-12



Certified Control Values

Element	Grade	Standard Deviation	Num of Analyses	Confidence Interval
Nickel (ppm)	77	7	79	+/- 2
Copper (ppm)	24118	942	115	+/- 175
Zinc (ppm)	413	25	92	+/- 5
Lead (ppm)	24	4	52	+/- 1
Cobalt (ppm)	nr	nr	nr	nr
Silver (ppm)	19.8	1.6	108	+/- 0.3
Sulphur (%)	0.03	0.01	68	+/- 0.001

CRM Details

Control Statistic Details

Control statistics were produced from results accumulated in the April-2022 round robin. The number of results used to certify each analyte is shown in the table above.

Material Description

This material is described as an Oxide copper - malachite, chrysocolla, cuprite and azurite ex WA.

Colour Designation (ISCC-NBS, SP440)

This material is grayish orange 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	308
Arsenic	567
Barium	150
Bromine	<2
Cadmium	<10
Caesium	3
Calcium (%)	nr
Cerium	26
Chromium	74
Cobalt	40
Europium	1.2
Gold (ppb)	283
Hafnium	<5
Iridium (ppb)	<50
Iron (%)	4
Lanthanum	14
Lutetium	0.3
Mercury	nr
Molybdenum	<10
Neodymium	nr
Nickel	74
Potassium (%)	nr
Rubidium	57
Samarium	2.8
Scandium	11.5
Selenium	<10
Silver	20
Sodium (%)	0.37
Strontium	nr
Tantalum	<2
Tellurium	<20
Terbium	<1
Thorium	4.1
Tin	<200
Tungsten	<2
Uranium	3
Ytterbium	1.4
Zinc	400
Zirconium	<500

Major Elements by Fusion / XRF (%)	
Fe	4.014
SiO_2	71.24
Al_2O_3	11.6
TiO_2	0.47
MnO	0.03
CaO	0.27
P	0.036
S	0.026
MgO	1.15
K_2O	1.47
Na_2O	0.44
LOI1000	4.17

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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