# GEOSTATS PTY LTD

**Mining Industry Consultants**
**Reference Material Manufacture and Sales**

**Certified Geochem Base Metal Reference Material Product Code**

# GBM916-5

**Certified Control Values**

## Total Digest

| Element | Grade | Standard Deviation | Num of Analyses | Confidence Interval |
|---|---|---|---|---|
| Nickel (ppm) | 5 | 2 | 54 | +/- 0.6 |
| Copper (ppm) | 7006 | 243 | 77 | +/- 55.5 |
| Zinc (ppm) | 268 | 15 | 68 | +/- 3.5 |
| Lead (ppm) | 149 | 15 | 68 | +/- 3.7 |
| Arsenic (ppm) | 22 | 3 | 54 | +/- 0.8 |
| Cobalt (ppm) | 10 | 1 | 65 | +/- 0.3 |
| Silver (ppm) | 2.3 | 0.4 | 59 | +/- 0.11 |

## Partial Digest

| Element | Grade | Standard Deviation | Num of Analyses | Confidence Interval |
|---|---|---|---|---|
| Nickel (ppm) | 4 | 1 | 45 | +/- 0.4 |
| Copper (ppm) | 7065 | 320 | 88 | +/- 68.2 |
| Zinc (ppm) | 223 | 14 | 66 | +/- 3.6 |
| Lead (ppm) | 85 | 9 | 65 | +/- 2.3 |
| Arsenic (ppm) | 19 | 3 | 55 | +/- 0.9 |
| Cobalt (ppm) | 10 | 1 | 56 | +/- 0.2 |
| Silver (ppm) | 2.3 | 0.4 | 70 | +/- 0.1 |

**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 Copper sulphide ex Indonesia.

**Colour Designation (ISCC-NBS, SP440)**

This material is very light 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 | 2.22 |
| Arsenic | 22 |
| Barium | 448 |
| Bromine | <2 |
| Cadmium | <10 |
| Caesium | 3 |
| Calcium (%) | nr |
| Cerium | 25.1 |
| Chromium | <20 |
| Cobalt | 11 |
| Europium | 0.726 |
| Gold (ppb) | 392 |
| Hafnium | <5 |
| Iridium (ppb) | <50 |
| Iron (%) | 4.3 |
| Lanthanum | 11.8 |
| Lutetium | 0.15 |
| Mercury | nr |
| Molybdenum | 23 |
| Neodymium | nr |
| Nickel | <20 |
| Potassium (%) | nr |
| Rubidium | 67 |
| Samarium | 2 |
| Scandium | 7 |
| Selenium | <10 |
| Silver | <5 |
| Sodium (%) | 1.25 |
| Strontium | nr |
| Tantalum | <2 |
| Tellurium | <20 |
| Terbium | <1 |
| Thorium | 3.5 |
| Tin | <200 |
| Tungsten | <5 |
| Uranium | <1 |
| Ytterbium | 0.698 |
| Zinc | 260 |
| 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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