CENTRAL GEOLOGICAL LABORATORY

CERTIFIED REFERENCE MATERIAL

CERTIFICATE OF ANALYSIS

USZ 7-91, GSO 6357-92
Silver ore "RS-1"

Elements and compounds	Mass fraction (based on dry mass at 105°C)		Number of accepted sets of results p
	Certified value ([1]) expressed as $cg.g^{-1}$	95% confidence interval ([2]) expressed as $cg.g^{-1}$	
Ag	169 $\mu g.g^{-1}$	5 $\mu g.g^{-1}$	14
Cu	0.46	0.03	17
Cd	0.0015	0.0001	10
Pb	0.101	0.006	12
Zn	0.42	0.01	10

([1]) This value is the unweighted mean of p accepted sets of results.
([2]) The 95% confidence interval is a measure of the uncertainty and is acceptable when the reference material is used for calibration purposes.

DESCRIPTION OF THE SAMPLE

The material is a reference material taken from the silver-complex deposit □Asgat□ in the western area of Mongolia. The material consists of a homogeneous powder (particles have passed a sieve with appertures smaller than 63 μm). The material contains the following minerals expressed as $cg.g^{-1}$:

Quartz: 18.2 Siderite: 58.2 Feldspar: 3.3
Arsenopyrite: 0.4 Calcite: 1.0 Chalcosine,covellite: 0.6
Sphalerite: 0.5 Pyrite: 1.1 Chalcopyrite: 0.6
Hydrous ferric oxide: 3.0 Chlorite-potash mica: 9.2
Ag-Zn-bearing tetrahydrite: 0.8 Bi-bearing chalcostibite: 0.5
Hydrous manganic oxide (psilomelane): 2.8

Additional information is presented on the attached sheet.
The CRM is available in units of 100 g.

TECHLAB
Matériaux de Référence Certifiés & Equipements de Laboratoire

4C la Tannerie – BP 30 055
57 072 – METZ CEDEX 3
Tél : (33) 03 87 75 54 29
Fax : (33) 03 87 36 23 90
Email : chezeaux@techlab.fr

INSTRUCTION FOR USE, STORAGE AND TRANSPORTATION

The recommended minimum sample intake is 100 mg. If there is a need of sample intake below 100 mg for an analytical method (e.g the optic emission spectrometry), weigh more than 100 mg and mix in an agate mortar. Then weigh necessary weight.
Taken portions should not be poured back in a bottle as it may contaminate the material.
The reference material is stored in a polyethylene bottle of 100 g. The bottle should be stored preferably in a dry place at the room temperature, protected from an effect of chemical reagents.
The reference material can be transported by any kind of transport means.
Date of production is 1991. Duration of use is 10 years.

PARTICIPATING LABORATORIES

Preparation; homogeneity and stability testing:

- Central Geological Laboratory, Ulaanbaatar, Mongolia

Certification analyses:

- Central Geological Laboratory, State Geological Centre, Ulaanbaatar, Mongolia
- Institute for Geology of the Academy of Science, Ulaanbaatar, Mongolia
- Institute for Physics and Techniques of the Academy of Science, Ulaanbaatar, Mongolia
- Chemistry Institute of the Academy of Science, Ulaanbaatar, Mongolia
- Reference Materials Section of the National institute for Standardization and Metrology, Ulaanbaatar, Mongolia
- Nuclear Research Laboratory of Mongolian State University, Ulaanbaatar, Mongolia
- Expertise Laboratory of Mining Production of the Central Board of State Metrology Service, Ulaanbaatar, Mongolia
- All-Union Scientific-research Institute of Mineral Resources (VIMS), Moscow, USSR
- Institut Geologiszny, Warszawa, PRL
- Central laboratory PGO □UJKAZGEOLOGY□, Alma-Ata, USSR
- All-Union Scientific-research Institute of Mineral resources (VIMS), Complex expedition, Naro-Fominsk, USSR
- Tulsky branch of the Central Research-scientific Institute for Geology and Exploration, Tula, USSR
- Sverdlowsky branch of the VNIKIET, Sverdlowsk, USSR
- VNIITsVETMET, USSR
- GIREDMET, USSR
- Sibtsvetmet Niiproekt, USSR
- Nevesk expedition, USSR
- Central laboratory □Centrkazgeology□, USSR
- Magyar Allami Foldtani Intezet, Budapest, MNK
- Ústav Nerostnych Surovin, Kutna Hora, CSSR

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- Zentrales Geologisches Institut, Berlin, DDR
- SDAG, Wismut, Autbereitungsbetrieb, Grossen, Germany
- SDAC Wismut, Geologischer Betrieb, Gruna, DDR

METHODS USED

Methods of final determination were:
-gravimetric (SiO_2, SO_3, LoI)
-volumetric (Al_2O_3, Fe_2O_3, FeO, SO_3, Zn, Pb, As, CaO, MgO, MnO)
-photometry (TiO_2, P_2O_5, As, Sb, SiO_2, Al_2O_3, Fe_2O_3, Na_2O)
-Atomic absorption spectrometry (MnO, MgO, Ag, Cu, Zn, Sb, Cd, Pb, Bi, As, Ni, SiO_2, Al_2O_3, CaO, Na_2O)
-arc emission spectrometry (Cu, Sb, Cd, Bi, As, Ni, TiO_2, P_2O_5)
-neutron activation (Cu, As)
-X-ray fluorescence spectrometry (Ag, Cu, Sb, Pb, Bi, As)
-polarigraph (Cu, Cd, Zn, Bi, Ni)
-ICP spectrometry (Zn, SiO_2, TiO_2, Al_2O_3, Fe_2O_3, CaO, MgO, MnO)

NOTE

A detailed technical report on the analysis procedure and the treatment of the analytical data is supplied with each sample.

ANNEX

Additional information (not certified) on various contents is presented here. The data are mean values of various sets of results obtained by various techniques in various laboratories.

Elements and compounds	Mass fraction expressed as $cg.g^{-1}$	Number of individual sets	Elements and compounds	Mass fraction expressed as $cg.g^{-1}$	Number of individual sets
Co	0.002	-	FeO	28.0	-
Bi	0.2	-	CaO	0.5	-
Ni	0.004	-	MgO	1.3	-
Fe	32.0	-	MnO	2.7	-
Mg	0.5	-	P_2O_5	0.05	-
Sb	0.16	-	K_2O	0.7	-
TiO_2	0.2	-	Na_2O	0.05	-
SiO_2	21.0	-	SO_3	5.0	-
Al_2O_3	3.0	-	S_{total}	2.0	-
Fe_2O_3	40.0	-			

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