CENTRAL GEOLOGICAL LABORATORY

CERTIFIED REFERENCE MATERIAL

CERTIFICATE OF ANALYSIS

USZ 4-85, GSO 3320-85, SO SEV 528-89
Tailings of copper-molybdenum ore processing

Elements and compounds	Mass fraction (based on dry mass at 105^0C)		Number of accepted sets of results p
	Certified value ([1]) expressed as $cg.g^{-1}$	95% confidence interval ([2]) expressed as $cg.g^{-1}$	
Cu	0.115	0.005	24
Mo	0.007	0.0007	19
Fe_2O_3 total	3.9	0.2	11
S total	2.03	0.04	6

([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 Mongolian-Soviet joint venture "Erdenet" Concentrator in the Erdenet Ovoo area of Mongolia. The material consists of a homogeneous powder (particles have passed a sieve with appertures smaller than 63 μm).
Additional information is presented on the attached sheet.

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.
The date of production is June, 1985. Duration of use is 5 years

PARTICIPATING LABORATORIES

Preparation:

- Central Geological Laboratory of the Ministry of Geology, Mining and Industry
- Mongolian-Soviet joint venture "Erdenet" Concentrator

Homogeneity and stability testing:

- Central Geological Laboratory of the Ministry of Geology, Mining and Industry
- Nuclear Research Laboratory of Mongolian State University
- Central Board of State Metrology Service of the State Committee of the Price and Standards

Certification analyses:

- Sub-laboratory of Reference Material of the Central Geological Laboratory, Ministry of Geology, Mining and Industry, Ulaanbaatar, Mongolian People"s Republic
- Chemistry sub-laboratory of the Central Geological Laboratory, Ministry of Geology, Mining and Industry, Ulaanbaatar, Mongolian People"s Republic
- Chemistry Laboratory of the Mongolian-Soviet joint venture "Erdenet" Concentrator, Erdenet, Mongolian People"s Republic
- Nuclear Research Laboratory of Mongolian State University, Ulaanbaatar, Mongolian People's Republic
- Optic methods laboratory of the General and Analytical Chemistry Department, Faculty of Natural Science, Mongolian State University, Ulaanbaatar, Mongolian People"s Republic
- Expertise Laboratory of Mining production of the Central Board of State Metrology Service, Ulaanbaatar, Mongolian People"s Republic
- Institute for physics and Techniques of the Academy of Science, Ulaanbaatar, Mongolian People"s Republic
- Chemistry Institute of the Academy of Science, Ulaanbaatar, Mongolian PR
- All-Union Scientific-research Institute of Mineral Resources (VIMS), Moscow, USSR
- Institute "UNIPROMED", USSR
- Institute "IRGIREDMET", Irkutsk, USSR
- Korilsky GMK, Korilsk, USSR

- Institute for Geology, Kolsky Branch of the Academy of Science, Anatity. USSR
- Territorial geological board of Ural, Sverdlowsk, USSR
- Uralsky Technical Institute, Sverdlowsk, USSR
- Institute for Geology and Geophysics of the Academy of Science of USSR, Novosibirsk, USSR
- VNITsVETMET, USSR

METHODS USED

Methods of final determination were:
-gravimetric (S, MnO)
-volumetric (Cu, Fe_2O_3, S, Al_2O_3)
-photometry (Cu, Fe_2O_3, Mo, TiO_2)
-Atomic absorption spectrometry (Cu, Mo, Fe_2O_3)
-arc emission spectrometry (Cu, Mo, TiO_2)
-neutron activation analysis (Cu, Mo, MnO, Na_2O, K_2O)
-gamma-activation analysis (Cu, Mo, Fe_2O_3, TiO_2, Na_2O, K_2O)
-polarigraph (Cu, Mo)
-X-ray fluorescence spectrometry (Cu, Mo, Fe_2O_3, TiO_2)
-emission spectrometry (Cu, Mo)
-flame photometry (Na_2O, K_2O)

LEGAL NOTICE

This reference material was confirmed by the State Committee of Price and Standards of MPR and the Standards Committee of USSR, under the sponsorship of the Council of the Mutual Economical Assistance. A number USZ 4-85 was given by the State Committee of the Price and Standards of MPR, GSO 3320-85 by the Standards Committee of USSR and SO SEV 528-89 by the Council of the Mutual Economical Assistance.

NOTE

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

INFORMATION SHEET ATTACHED TO THE CERTIFICATE OF USZ 4-85, GSO 3320-85, SO SEV 528-89

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
	Content	Standard deviation	
Na_2O	1.74	-	4
K_2O	3.38	-	3
P_2O_5	0.15	-	-
Loss on ignition	4.26	-	-

Elements	Mass fraction expressed as $\mu g.g^{-1}$	Number of individual sets	Elements	Mass fraction expressed as $\mu g.g^{-1}$	Number of individual sets
Ag	1.1	-	Pb	51.0	-
As	47.0	-	Rb	80.0	-
Be	4.5	-	Se	5.4	-
Bi	21.7	-	Te	6.8	-
Co	12.0	-	W	16.0	-
Cr	22.0	-	Zn	68.0	-
Ni	16.5	-	Zr	149.0	-