CENTRAL GEOLOGICAL LABORATORY

CERTIFIED REFERENCE MATERIAL

CERTIFICATE OF ANALYSIS

UST 3138-81
Fluorspar "HJ"

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 $cg.g^{-1}$	
SiO_2	23.01	0.01	11
TiO_2	0.047	0.004	8
Al_2O_3	2.35	0.05	12
Fe_2O_3(total)	0.34	0.014	10
Ca (total)	37.32	0.19	10
K_2O	0.99	0.05	11
F (total)	34.92	0.19	7

([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 Har-Airag fluorspar deposit 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 $cg.g^{-1}$:

Fluorspar: 72.6 Potassium feldspar: 6.1 Quartz: 17.3
Plagioclase: 2.3 Hydrous ferric oxide: 0.8

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.

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The reference material is stored in a glass or polyethylene bottle of 100 g. The bottle should be stored preferably in a dry place at the temperature from $+15^0$C to $+30^0$C, protected from an effect of acids, alkali and vibration.
The reference material can be transported by any kind of transport means in simple conditions.
The date of production is September, 1979.
Duration of use is 15 years.

PARTICIPATING LABORATORIES

- Геоложко предприятие за лаборатории изследвания, София, НРБ
- Magyar Allami Földtani Intezet, Budapest, MNK
- Zentrales Geologisches Institut, Berlin, DDR
- FEB Geological Research and exploration, Halle, GDR
- Central Geological Laboratory of the Ministry of Geology, Mining and Industry, Ulaanbaatar, Mongolian People's Republic
- Production and Research Institute for Geology and Mining, Ministry of Geology, Mining and Industry, Ulaanbaatar, Mongolian People's Republic
- Chemistry Institute of the Academy of Science, Ulaanbaatar, Mongolian PR
- Nuclear research laboratory of Mongolian State University, Ulaanbaatar, Mongolia
- All-Union Scientific-Research Institute of Mineral resources (VIMS, Moscow, USSR
- Instytut Geologiczny, Warszawa, PRL
- Institute for geology and geophysics, Buharest, Romania
- North-west territorial geological Board, Leningrad, USSR
- Ustav nerostnych surovin, Kutnà Hora, CSSR

METHODS USED

Methods of final determination were:
-gravimetric (SiO_2, F)
-volumetric (Al_2O_3, Ca)
-photometry (SiO_2, TiO_2, Al_2O_3, Fe_2O_3, Ca)
-Atomic absorption spectrometry (Al_2O_3, Fe_2O_3, Ca, K_2O)
-Flame photometry (K_2O)
-others (SiO_2, Al_2O_3, Fe_2O_3, Ca, K_2O, F)

LEGAL NOTICE

This reference material was prepared as a state standard. A number of the reference material (UST 3138-81) was given by State Committee of the Price and Standards of MPR.

NOTE

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

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INFORMATION SHEET ATTACHED TO THE CERTIFICATE OF UST 3138-81

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	
MnO	0.007	0.002	7
MgO	0.021	0.003	5
$CaCO_3$	0.73	0.19	5
CaF_2	72.37	0.65	8
P_2O_5	0.021	0.003	7
Loss on ignition	0.60	0.06	7

Elements and compounds	Mass fraction expressed as $\mu g.g^{-1}$			Number of individual sets
	Mean value	Minimum value	Maximum value	
Ag	0.40	0.33	0.47	2
Co	17.50	5.00	27.50	3
Cr	7.33	6.80	8.30	3
Cu	14.60	8.20	20.00	4
Ni	13.50	4.50	30.00	3
Pb	35.70	21.00	70.00	5
Sr	96.50	63.00	130.00	2
V	5.70	5.00	6.30	2
Zn	25.70	5.50	40.50	3
Zr	21.10	5.20	37.00	2

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