CENTRAL GEOLOGICAL LABORATORY

CERTIFIED REFERENCE MATERIAL

CERTIFICATE OF ANALYSIS

USZ 15-94
Chestnut soil "TsH-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 $cg.g^{-1}$	
SiO_2	62.51	0.11	11
Al_2O_3	14.84	0.20	15
Fe_2O_3	5.75	0.13	13
TiO_2	0.86	0.03	15
MgO	1.65	0.11	15
MnO	0.08	0.01	14
Na_2O	3.14	0.14	14
K_2O	2.47	0.02	14
CaO	2.66	0.13	13
P_2O_5	0.16	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 Tsagaan tolgoi, Selenge 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: 24.5	Plagioclase: 27.3
Hydrous ferric oxide: 2.1	Potassium feldspar: 2.6
Argillaceos minerals: 20.7	Sericite-muscovite: 4.8
Green amphibole: 6.3	Others: 0.6

Additional information is presented in the Annex.

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, 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 June, 1994. Duration of use is 10 years.

PARTICIPATING LABORATORIES

Preparation; homogeneity and stability testing:

- Central Geological Laboratory

Certification analyses:

- Chemistry sub-laboratory of the Central Geological Laboratory, Ministry of Energy, Geology and Mining, Ulaanbaatar, Mongolia
- Sub-laboratory of Technology and Experiment of the Central Geological Laboratory, Ministry of Geology, Mining and Industry, Ulaanbaatar, Mongolia
- Section of Methodology, Control and Standardization of the Central Geological laboratory, Ministry of Geology, Mining and Industry, Ulaanbaatar, Mongolia
- Nuclear Physics Section of the Central Geological laboratory, Ministry of Geology, Mining and Industry, Ulaanbaatar, Mongolia
- Research-scientific Laboratory of the Institute for Medicine, Ulaanbaatar, Mongolia
- Institute for Geology of the Academy of Science, Ulaanbaatar, Mongolia
- Optic-spectroscopy Laboratory of the Mongolian State University, Ulaanbaatar, Mongolia
- Geography Institute of the Academy of Science, Ulaanbaatar, Mongolia
- Section of Reference Materials of the National Institute for Standardization and Metrology, Ulaanbaatar, Mongolia
- Scientific-production Company □Erdes□, Ulaanbaatar, Mongolia
- Geological Institute of Canada

METHODS USED

Methods of final determination were:
-gravimetric (SiO_2)
-volumetric (Al_2O_3, Fe_2O_3, CaO, MgO)
-photometry (TiO_2, P_2O_5, SiO_2, MnO, Fe_2O_3)
-Atomic Absorption Spectrometry (CaO, MgO)
-X-ray fluorescence spectrometry (TiO_2, Al_2O_3, MnO, Fe_2O_3, CaO, Na_2O, K_2O)
-flame photometry (Na_2O, K_2O)
-ICP spectrometry (TiO_2, Al_2O_3, MnO)

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LEGAL NOTICE

The was confirmed and given a number USZ 15-94 by the National Institute for Standardization and Metrology.

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
	Content	Standard deviation	
FeO	1.44	0.21	9
Loss on ignition	5.29	0.26	13
H_2O^-	4.97	0.17	6

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