

GSSR - EnviPT-1, Coal Fly Ash

Veranstalter: Geological Survey of Slovak Republic (GSSR) - Ministry of Environment of Slovak Republic

Ringversuchsmaterial: EnviPT-1, Coal-Fly-Ash

RV geschlossen: 2001 – 6

Literatur: Ausführlicher Bericht und Zertifikat

Hauptelemente [MA%]

	CRB	RV	1sRV	Z-Score
Na ₂ O	0,63	0,71	0,017	
MgO	1,62	1,62	0,033	
Al ₂ O ₃	14,11	13,87	0,233	
SiO ₂	68,2	68,41	1,2	
P ₂ O ₅	0,112	0,106	0,004	
S	0,57	0,52	0,028	
K ₂ O	1,84	1,83	0,057	
CaO	3,68	3,657	0,096	
TiO ₂	0,6	0,584	0,016	
Fe ₂ O ₃ tot.	6,87	6,696	0,132	
MnO	0,047	0,0486	0,001	

Spurenelemente [µg/g]

	CRB	RV	1sRV	Z-Score
As	315	273	5,2	
Ba	507	476	13,2	
Co	16	12,95	0,94	
Cr	58	62,4	2,81	
Cu	23	24,84	1,53	
Nb	12	12,4	1,4	
Nd	23	25,7	1,6	
Ni	49	43	2,8	
Pb	29	15,5	1,2	
Rb	104	98,3	2,8	
Sb	5	2,4	0,25	
Sm	4,8	4,9	0,57	
Sr	243	233	3,3	
Th	13	10,12	0,7	
U	6	5,4	0,7	
V	99	101,2	3,6	
Y	26	24,7	1,1	
Zn	72	60,4	2,16	
Zr	178	161	3,8	

Legende

CRB: Ergebnisse CRB – **RV:** Ergebnisse Ringversuch -- **1s-RV:** Standardabweichung Ringversuch

Z-Score: Differenz des Messwertes vom Mittelwert des Ringversuchs -- * Wert nicht zertifiziert



CERTIFICATE

of participation in the Inter-laboratory proficiency test EnviPT 1

Laboratory: CBR Analyse Service GmbH
Bahnhofstrasse 14
37181 Hardegsen, Germany

Code : 39


Laboratory has participated in the Inter-laboratory proficiency test covering major and trace elements in fly ash:

1. major elements : SiO_2 , Al_2O_3 , Fe_2O_3 Total, CaO , MgO , Na_2O , K_2O , MnO , TiO_2 , P_2O_5 , S as SO_3 , LOI
2. trace elements I : As, Ba, Cd, Co, Cr, Cu, Ni, Pb, Sb, V, Zn
3. trace elements II : Rb, Sr, Y, Zr, Nb, La, Th, U
4. rare earth elements : Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu

Elements in compliance with ISO 5725 „Statistical treatment of proficiency tests“ are:

1. SiO_2 , Al_2O_3 , Fe_2O_3 , CaO , MgO , Na_2O , K_2O , TiO_2 , P_2O_5 , SO_3 , LOI
2. As, Ba, Co, Cr, Cu, Ni, V, Zn
3. Rb, Sr, Y, Zr, Th, U
4. Nd

Spišská Nová Ves 28. June 2001


Ing. Hana Mjartanová
Head of Reference Laboratory



Doc. RNDr. Michal Kaličiák, CSc.
Director of Geological Survey



Table 3. Consensus mean, repeatability and reproducibility standard deviations of elements.

	m %	s(r) %	s(R) %	p
SiO ₂	68,409	1,2	1,611	29
Al ₂ O ₃	13,871	0,233	0,577	30
CaO	3,657	0,096	0,257	32
Fe ₂ O ₃	6,696	0,132	0,313	29
K ₂ O	1,83	0,057	0,115	26
MgO	1,617	0,033	0,106	29
MnO	0,0486	0,0011	0,0063	27
Na ₂ O	0,714	0,017	0,074	25
P ₂ O ₅	0,1062	0,0044	0,0258	26
S as SO ₃	0,52	0,028	0,174	26
TiO ₂	0,584	0,0164	0,0537	26
LOI	2,049	0,029	0,194	29
	mg/kg	mg/kg	mg/kg	mg/kg
As	272,9	5,2	35,9	29
Ba	475,6	13,2	54,9	28
Cd	0,214	0,027	0,175	11
Ce	55,43	3,45	7,71	11
Co	12,95	0,94	2,85	30
Cr	62,42	2,81	8,32	26
Cu	24,84	1,53	4,42	29
Dy	4,128	0,253	0,333	9
Er	2,411	0,229	0,241	9
Eu	1,06	0,058	0,094	9
Gd	4,597	0,287	0,436	9
Ho	0,826	0,025	0,064	7
La	29,2	2,3	5,0	13
Lu	0,369	0,012	0,05	8
Nb	12,4	1,4	3,6	9
Nd	25,73	1,6	2,24	11
Ni	42,65	2,79	8,13	32
Pb	15,45	1,21	5,74	33
Pr	6,398	0,371	0,687	9
Rb	98,3	2,8	8,1	23
Sb	2,403	0,25	1,102	12
Sm	4,961	0,572	0,572	9
Sr	233,2	3,3	18,6	24
Tb	0,72	0,038	0,046	8
Th	10,12	0,72	3,9	16
Tm	0,351	0,022	0,033	7
U	5,43	0,71	1,49	15
V	101,2	3,6	9	23
Y	24,7	1,1	3,2	20
Yb	2,38	0,103	0,224	9
Zn	60,42	2,16	12,9	32
Zr	161,2	3,8	23,5	22

m - consensus mean

s(r) - repeatability standard deviation

s(R) - reproducibility standard deviation

p - number of acceptable laboratories



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Dear Colleague,

We send you final report of the Inter-laboratory proficiency test EnviPT-1.

We are looking forward co-operation with you.

Yours faithfully

Spišská Nová Ves, 29. June 2001


Ing. Daniela Mackových, PhD.
EnviPT1 Co-ordinator