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CERTIFICATE OF ANALYSES

EŻP-2

REFERENCE MATERIAL OF SLAG

Analysis listed as percent by weight [% m/m]:

Ca	**24.03**
F	**(0.89)**
Al_2O_3	**41.38**
SiO_2	**5.81**
MgO	**16.89**

Value in brackets is informative

Certificate Number: EŻP2-121124
Certificate revision history on page 3

Analysis	% Ca	% F	% Al_2O_3	% SiO_2	% MgO
1	23,83	1,04	41,64	5,74	17,62
2	24,13	-	41,23	5,73	17,16
3	24,22	-	41,27	5,97	16,82
4	23,81	-	41,88	5,76	16,71
5	23,95	0,64	41,60	5,78	16,64
6	23,82	0,83	41,80	5,72	16,64
7	23,54	0,88	40,89	5,79	16,58
8	23,69	0,64	40,60	5,94	17,07
9	23,98	1,06	41,76	5,64	16,76
10	24,24	0,97	41,13	5,97	16,98
11	24,38	0,94	41,02	5,94	16,94
12	24,33	-	41,29	-	16,99
13	24,31	-	41,61	5,69	16,52
14	-	-	40,63	5,94	17,04
15	24,09	1,03	41,91	-	-
Certified value	**24,03**	**(0,89)***	**41,38**	**5,81**	**16,89**
C(95%)	0,14	-	0,23	0,07	0,17

* - informative value

C(95%) = (t · sd)/$\sqrt{n-1}$ - The half-width confidence interval calculated for the 95 % confidence level, where t is the appropriate Student's t value,

Certification Process: Both preparation of this reference material and certification process were prepared according to requirements of ISO Guide 31, ISO Guide 34 and ISO Guide 35. This reference material is in agreement with ISO Guide 30.

Chemical Analysis: Chemical analyses were carried out on dried at 105^{O}C powder samples. Single values in the above table are the means obtained by individual laboratories. The following methods were used for analysis:

F - complexometric titration after PbClF isolation, titrimetric method after pyrohydrolysis;
Ca - complexometric titration, atomic absorption spectrometry; titrimetric method after melting with sodium peroxide ;
MgO - complexometric titration, gravimetric method as phosphate; atomic absorption spectrometry;
Al_2O3 - complexometric titration, atomic absorption spectrometry, titrimetric method after melting with sodium peroxide;
SiO_2 - photometric method as molybdenum blue, gravimetric method; atomic absorption, alkalimetric titration.

The laboratories participating in certification analysis:
- Huta Baildon, Katowice;
- Huta Batory, Chorzów;
- Huta Warszawa, Centralne Laboratorium Chemiczne, Warszawa;
- Huta Pokój, Centralne Laboratorium Chemiczne, Ruda Śląska;
- Huta Ostrowiec S.A., Ostrowiec Świętokrzyski;
- Instytut Metalurgii Żelaza, Gliwice;

- Nova hut Ostrava s.p., Ostrava, Czech Republic;
- Vitkowice Zelazarny a Strojirny K.G., Ostrawa-Vitkowice, Czech Republic;
- Třinecke Żelezarny, a.s., Třinec, Czech Republic;
- Laboratory I, Bulgaria;
- Laboratory II, Bulgaria;
- Bergakadamie, Freiberg, Germany;
- Edelsthlwerk, Freital, Germany;
- Stahl- und Walzwerk, Riesa, Germany;
- Laboratory I, Hungary.

Homogeneity: The homogeneity of this Reference Material was evaluated with the use of X-ray fluorescence spectrometry and found acceptable.

Available form: 100g of powder sample, grain size less than 0.1 mm

Intended use: This Reference Material is intended for use in determination of chemical composition of slag by x-ray fluorescence spectrometry, UV-Vis spectrometry, AAS, ICP-AES and C,S-analyzers and other wet methods. Chemical analyses should be carried out on samples dried at 105^{O}C.

Validity of certification: The certification of EŻP-1 is valid for 15 years - until June 2035, within the uncertainty specified provided this Reference Material is handled stored in accordance with the instructions given in this certificate (see Storage). The certification is nullified if this Reference Material is damaged, contaminated or otherwise modified.

Revision: This Reference Material was certified originally in September 1979. Additional tests were performed to prove that the material remains unchanged.

Storage: This Reference Material should be stored in dry place and in environment free from chemical or other aggressive vapours and should be protected against vibration. If the contents become changed (for example oxidized) because of contamination, the whole contents of bottle should be discarded.
Inquiries regarding this Reference Material should be directed to
rm@git.lukasiewicz.gov.pl

Approved by
Director of the Institute

Prof. Dr. Hab. Eng. Adam Zieliński

Certificate issue date: 12 November 2024

Certificate revision history:
12 November 2024 (editorial changes); 09 June 2020 (change of information regarding validity of certification, editorial changes); May 2002 (editorial changes); September 1979 (Original certificate date)