



CERTYFICATE

OF ANALYSIS

CEMA CRM FOR CHEMICAL ANALYSIS

No 2 – 75

IRON STEELMAKING SLAG

Res. No	MgO	CaO	SiO ₂	Al ₂ O ₃	Mn	P	S	Fe _{tot.}	Zn	Na ₂ O	K ₂ O	TiO ₂
1	5,33	44,65	41,21	4,86	0,628	0,016	0,388	0,574	0,0058	0,887	1,09	0,168
2	5,27	44,62	41,21	4,84	0,620	0,014	0,386	0,573	0,0032	0,884	1,08	0,165
3	5,26	44,51	41,17	4,78	0,612	0,014	0,386	0,572	0,0028	0,862	1,03	0,163
4	5,24	44,42	41,15	4,77	0,610	0,014	0,378	0,570	0,0023	0,848	1,01	0,156
5	5,23	44,41	41,06	4,75	0,606	0,012	0,370	0,560	0,0021	0,828	1,01	0,154
6	5,22	44,39	41,01	4,72	0,603	0,010	0,368	0,556	0,0020	0,818	1,01	0,146
7	5,18	44,37	40,93	4,70	0,603	0,010	0,356	0,540		0,795	0,948	
8	5,14	44,30	40,85	4,69	0,602	0,010	0,355	0,540		0,745	0,946	
9	5,13	44,30	40,84	4,68	0,602	0,0093	0,349	0,538		0,720	0,932	
10	5,12	44,20	40,72	4,57	0,590	0,0090	0,344	0,530				
11	5,11	44,16	40,59	4,55	0,584	0,0087		0,524				
12	5,04	44,00		4,38	0,584	0,0067		0,504				
13	5,04	43,80			0,580	0,0066		0,498				
14					0,578	0,0022						
15					0,576	0,016						
Certf. value	5,18	44,35	40,99	4,71	0,598	(0,01)	0,368	0,548	(0,003)	(0,823)	1,01	0,160
Conf. interval	0,058	0,142	0,154	0,084	0,0086		0,013	0,016			0,051	0,011

The confidence interval calculated of 95 % statistical probability

Director of the Institute

dr inż. Adam Schwedler

Cooperating laboratories

- Steelworks Czestochowa, Poland
- Steelworks Bobrek, Poland
- Steelworks Florian, Poland
- Steelworks T. Sendzimira, Poland
- Steelworks Katowice, Poland
- Steelworks Pokoj, Poland
- Institute for Ferrous Metallurgy - Gliwice, Poland
- Steelworks Ostrowiec, Poland
- Institute for Refractory Materials - Gliwice, Poland
- Energopomiar – Gliwice, Poland
- MH-Unterwellenborn, Germany
- Steelworks EKO, Eisenhuttenstadt, Germany
- Steelwork Ostrava, Czech Republic
- VUHZ, Dobra, Czech Republic

Methods used

- MgO - complexometric titration;
CaO - complexometric titration, atomic absorption spectrometry;
SiO₂ - gravimetric after dehydration with perchloric acid;
Al₂O₃ - complexometric titration, gravimetric;
Mn - titrimetric with arsenite nitrate solution, atomic absorption spectrometry, photometric;
P - titrimetric alkalimetric titration, photometric as molybdenum blue, photometric as phosphovanadmolybdate;
S - combustion infrared absorption, combustion alkalimetric titration, combustion iodometric titration, gravimetric;
Fe - complexometric titration, volumetric by titration with dichromate solution, photometric, atomic absorption spectrometry;
Zn - atomic absorption spectrometry, polarographic;
Na₂O - atomic absorption spectrometry, flame emission spectrometry;
K₂O - atomic absorption spectrometry, flame emission spectrometry;
TiO₂ - atomic absorption spectrometry, photometric with diantypirylometane, photometric with hydrogen peroxide;