

EUROPEAN COAL AND STEEL COMMUNITY
COMMUNAUTÉ EUROPÉENNE DU CHARBON ET DE L'ACIER
EUROPÄISCHE GEMEINSCHAFT FÜR KOHLE UND STAHL
EUROPEAN CERTIFIED REFERENCE MATERIAL (EURONORM — CRM)

CERTIFICATE OF CHEMICAL ANALYSIS

EURONORM - CRM No. 583-1 FERRO-MANGANESE

LABORATORY MEANS (4 values)
mass content in %

Line No.	C	Si	Mn	P	S	N	Fe
1	—	0.3682	86.11	0.1379	0.0043	0.0376	12.28
2	0.3128	0.3750	86.14	0.1380	0.0050	0.0408	12.32
3	0.3180	0.3750	86.26	0.1390	0.0056	0.0420	12.42
4	0.3198	0.3838	86.28	0.1415	0.0058	0.0442	
5	0.3280	0.3888	86.29	0.1415	0.0058		
6	0.3300	0.3900	86.30	0.1425	0.0060		
7	0.3300	0.3930	86.36	0.1432	0.0061		
8	0.3302	0.3939	86.38	0.1442	0.0062		
9	0.3328	0.3950	86.39	0.1450	0.0062		
10	0.3348	0.3975	86.42	0.1450	0.0062		
11	0.3350	0.3978	86.43	0.1455	0.0064		
12	0.3350	0.3980	86.43	0.1470	0.0066		
13	0.3362	0.4000	86.48	0.1470	0.0072		
14	0.3368	0.4012	86.48	0.1478	0.0072		
15	0.3372	0.4015	86.49	0.1485	0.0074		
16	0.3378	0.4040	86.49	0.1492	0.0075		
17	0.3380	0.4040	86.51	0.1495	0.0075		
18	0.3388	0.4050	86.53	0.1522	0.0077		
19	0.3405	0.4112	86.65	0.1535	0.0085		
20	0.3408	0.4125	86.65	0.1562	0.0095		
21	0.3420	0.4138	86.70	0.1580	—		
M_M	0.3327	0.3957	86.42	0.1463	0.007	0.041	12.3
S_M	0.0079	0.0123	0.15	0.0056			

M_M : Mean of the intralaboratory means. S_M : Standard deviation of the intralaboratory means.

The laboratory mean values have been examined statistically to eliminate any outlying values. Where a "—" appears in the table it indicates that an outlying value has been omitted.

CERTIFIED VALUES

mass content in %

	C	Si	Mn	P
M_M	0.333	0.396	86.42	0.146
S_M	0.008	0.012	0.15	0.006

DESCRIPTION OF THE SAMPLE

This sample consists of material passing sieve of aperture size 150 μ m. It is supplied only in bottles containing 100g.

PARTICIPATING LABORATORIES

Arbed, Division d'Esch Belval, Esch-sur-Alzette, (Luxembourg)
 Böehler AG., Dusseldorf (Germany)
 British Steel Corporation, Scunthorpe (UK)
 Bundesanstalt für Materialprüfung (BAM), Berlin-Dahlem (Germany)
 Cockerill, Seraing (Belgium)
 Centro Sperimentale Metallurgico (CSM), Rome (Italy)
 Electrowerk-Weisweiler GmbH, Eschweiler-Weisweiler (Germany)
 Elkington Copper Refiners Ltd., Walsall (UK)
 Klöckner-Werke AG., Bremen (Germany)
 Laboratoires d'Analyses Pourquery, Bobigny (France)

London and Scandinavian Metallurgical Co. Ltd., Sheffield (UK)
 Murex Ltd., Rainham (UK)
 Ridsdale & Co. Ltd., Middlesbrough (UK)
 Société Anonyme Cockerill-Sambre SA., Couillet (Belgium)
 Société Française d'Electrometallurgie, Bonneville (France)
 Société Française d'Electrometallurgie, Le Fayet (France)
 Société Nouvelle Acieries de Pompey, Pompey (France)
 SOFREM, St. Béron (France)
 Tassara Breno, Breno (Italy)
 Thyssen AG., Duisburg 11 (Germany)
 Thyssen Edelstahlwerke, Krefeld (Germany)



This reference material prepared and issued by:

BUREAU OF ANALYSED SAMPLES LIMITED

Newham Hall, Middlesbrough, England

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On behalf of: The Iron and Steel Nomenclature Co-ordinating Committee
(COCOR) of the European Coal and Steel Community.

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METHODS USED
EURONORM-CRM 583-1

Element	Line Number	Methods
C	2 - 10	Combustion, coulometric
	3 - 4 - 6 - 9 - 11 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20 - 21	Combustion, infrared absorption
	5	Combustion, conductimetric
	7	Combustion, gravimetric
	8	Combustion, non aqueous titration
	12	Combustion, thermal conductivity
Si	1 - 12 - 18	Gravimetric, dehydration with sulphuric acid
	2 - 3 - 4 - 6 - 7 - 8 - 9 - 10 - 11 - 15 - 16 - 17 - 19 - 20 - 21	Gravimetric, dehydration with perchloric acid
	5	Atomic absorption spectrometry
	13	Gravimetric, dehydration with hydrochloric acid in presence of gelatine
	14	Gravimetric, dehydration with hydrochloric acid
Mn	1 - 2 - 3 - 4 - 5 - 8 - 9 - 10 - 11 - 13 - 14 - 16 - 17 - 18 - 19	Titrimetric with permanganate, potentiometric end point
	6 - 7 - 12 - 20	Titrimetric with permanganate, zinc oxide separation, potentiometric end point
	15	X-ray fluorescence spectrometry, fused bead technique with synthetic calibration
	21	Titrimetric with ammonium ferrous sulphate, oxidation with bismuthate
P	1 - 2 - 3 - 4 - 8 - 19	Photometric as phosphovanadomolybdate, with extraction
	5 - 9 - 10 - 11 - 15 - 16	Photometric as molybdenum blue
	6	Gravimetric, precipitation as phosphomolybdate
	7 - 20 - 21	Photometric as molybdenum blue with extraction
	12 - 13 - 18	Titrimetric, precipitation as phosphomolybdate
14 - 17	Photometric as phosphovanadomolybdate	
S	1 - 3 - 5 - 6 - 7 - 8 - 9 - 12 - 13 - 16 - 17 - 18	Combustion, infrared absorption
	2	Combustion, oxidation/reduction titration
	4 - 20	Evolution, titrimetric with 2 (hydroxymercuri) benzoic acid
	10 - 19	Combustion, conductimetric
	11	Combustion, photometric with p-rosaniline
	14	Gravimetric as barium sulphate
15	Combustion, coulometric	
N	1	Carrier gas fusion, thermal conductivity
	3 - 4	Acidimetric titration, separation by distillation
Fe	1 - 3	Titration with dichromate

FURTHER INFORMATION

For information regarding the preparation and certification of EURONORM-CRMs (Certified Reference Materials) and sources of supply please refer to ECSC Information Circular No. 1 available from the Institution responsible for standardization in your country. (In the UK this is the BSI, 2 Park Street, London. W1A 2BS.)

Pour tous renseignements sur les EURONORM-MRC (Matériaux de Référence Certifiés) se reporter à la Circulaire d'information No. 1 de la CECA, diffusée par les organismes nationaux de normalisation.

Wegen Erläuterungen über EURONORM-ZRM (Zertifiziertes Referenzmaterial) siehe Mitteilung Nr. 1 der EGKS, zu beziehen durch die nationalen Normenorganisationen.