

ECSC - CEEA - EGKS

**EUROPEAN COAL AND STEEL COMMUNITY**  
**COMMUNAUTÉ EUROPÉENNE DU CHARBON ET DE L'ACIER**  
**EUROPÄISCHE GEMEINSCHAFT FÜR KOHLE UND STAHL**

**EURO - STANDARD No. 084-I UNALLOYED STEEL**

**CERTIFICATE OF ANALYSES**

Laboratory Means (4 values)

Line No.	%C	%Si	%Mn	%S	%Mo	%Ni	%Cu	%Sn
1	0.3842	—	0.8425	0.0268	0.0300	—	0.2600	0.0184
2	0.3850	0.2581	0.8425	0.0268	0.0315	0.1454	0.2630	0.0204
3	0.3852	0.2582	0.8450	0.0271	0.0318	0.1475	0.2632	0.0204
4	0.3857	0.2610	0.8495	0.0272	0.0320	0.1512	0.2635	0.0206
5	0.3868	0.2615	0.8500	0.0275	0.0322	0.1512	0.2638	0.0207
6	0.3870	0.2620	0.8562	0.0279	0.0322	0.1525	0.2638	0.0216
7	0.3885	0.2622	0.8568	0.0279	0.0322	0.1525	0.2650	0.0218
8	0.3887	0.2628	0.8585	0.0279	0.0322	0.1527	0.2650	0.0218
9	0.3892	0.2630	0.8588	0.0282	0.0328	0.1530	0.2650	0.0218
10	0.3895	0.2638	0.8590	0.0282	0.0332	0.1537	0.2660	0.0221
11	0.3920	0.2642	0.8600	0.0282	0.0333	0.1542	0.2662	0.0235
12	0.3922	0.2645	0.8600	0.0285	0.0334	0.1545	0.2665	0.0235
13	0.3925	0.2650	0.8615	0.0292	0.0334	0.1545	0.2667	0.0252
14	0.3930	0.2660	0.8650	0.0292	0.0335	0.1558	0.2675	0.0252
15	0.3948	0.2675	0.8660	0.0293	0.0340	0.1560	0.2682	0.0257
16	0.3960	0.2680	0.8670	0.0294	0.0352	0.1565	0.2688	0.0260
17	0.3965	0.2685	0.8700	0.0294	0.0352	0.1582	0.2698	0.0260
18	0.3970	0.2698	0.8725	0.0300	0.0360	0.1587	0.2712	0.0270
19	0.3972	0.2698	0.8775	0.0302	0.0364	0.1589	0.2725	0.0285
20	0.3985	0.2712	0.8808	0.0305	—	0.1595	0.2730	—
21	—	—	—	0.0307	—	0.1608	0.2760	—
M <sub>M</sub>	0.3910	0.2651	0.8600	0.0286	0.0332	0.1544	0.2669	0.0232
s <sub>M</sub>	0.0046	0.0044	0.0107	0.0012	0.0016	0.0039	0.0039	0.0027

M<sub>M</sub>: Mean of the intralaboratory means.

s<sub>M</sub>: standard deviation of the intralaboratory means.

**CERTIFIED VALUES**

	%C	%Si	%Mn	%S	%Mo	%Ni	%Cu	%Sn
M <sub>M</sub>	0.391	0.265	0.860	0.029	0.033	0.154	0.267	0.023
s <sub>M</sub>	0.005	0.004	0.011	0.001	0.002	0.004	0.004	0.003

Laboratories which have participated in the standardization of Euro-Standard 084-I

Arbed, Differdange (Luxembourg)  
 Arbed, d'Esch-Belval, Esch-sur-Alzette (Luxembourg).  
 British Steel Corporation, Research Centre, Teesside, Middlesbrough (U.K.)  
 British Steel Corporation, Rotherham Works (U.K.)  
 Centro Sperimentale Metallurgico, Rome (Italy)  
 Creusot-Loire, Le Creusot (France)  
 Fiat-Sezione Ferriere, Turin (Italy)  
 Fried. Krupp Hüttenwerke AG, Werk Rheinhausen (Germany)  
 Hoogovens, IJmuiden (Holland)  
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 Laboratoire Central de l'Armement, Arcueil, (France)  
 Laboratoires d'Analyse Pourquerey, Paris (France)  
 Klöckner-Werke AG, Bremen (Germany)  
 Klöckner-Werke AG, Georgsmarienhütte (Germany)  
 N.V. Staalgieterij SMDK, Utrecht (Holland)  
 Ridsdale & Co. Ltd., Middlesbrough (U.K.)  
 Société Cockerill, Seraing (Belgium)  
 Stahlwerke Röhring-Burbach GmbH, Völklingen-Saar (Germany)  
 Steel Castings Research and Trade Association, Sheffield (U.K.)  
 Usinor, Thionville (France)

For the Commission of Co-ordination of the Nomenclature of metallurgical products—Commission of European Communities.

For information regarding the Euro-Standards, please refer to the ECSC Information Circular No. 1 available from the Institution responsible for standardisation in your country.

Pour tous renseignements sur les Euro-échantillons-types, se reporter à la Circulaire d'information No. 1 de la CEEA, diffusée par les organismes nationaux de normalisation.

Wegen Erläuterungen über Euro-Analysenkontrollproben siehe Mitteilung Nr. 1 der EGKS. Zu beziehen durch die nationalen Normenorganisationen.



**BUREAU OF ANALYSED SAMPLES LIMITED**  
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# METHODS USED

084-1

Element	Line Number	Methods
C	1-12-16	Non-aqueous titration
	2-4-5-15	Conductimetric
	3	Gravimetric
	6	Low pressure gasometric
	7-14-19	Coulometric
	8-10-20	Infrared absorption
	9-11-13-17-18	Thermal conductivity
Si	2-4-9-10-11-18	Colorimetric as molybdenum-blue
	3-5-6-8-12-13-15-17-19-20-21	Gravimetric after dehydration with perchloric acid
	7-14-16	Atomic absorption spectroscopy
Mn	1-2-7-16-19	Titrimetric after oxidation with persulphate
	3-4-12-14	Atomic absorption spectroscopy
	5-6-8-9-11-13-15-17-18-20	Colorimetric with periodate
	10	Colorimetric with persulphate
S	1-2	Combustion, oxidation-reduction titration
	3-5-11-16-18-20	Combustion, acidimetric titration
	4-13-14-21	Combustion, conductimetric
	6-7-8-10-12-15-19	Combustion, infrared absorption
	9	Gravimetric, chromatographic separation on alumina
	17	Combustion, coulometric
Mo	1-3-9-10-11-12-13-15-19	Colorimetric with thiocyanate after extraction
	2-4-5-6-8-14	Atomic absorption spectroscopy
	7-16-17-18	Colorimetric with thiocyanate without extraction
Ni	2-6-8-9-11-13-17-18-19-21	Colorimetric with dimethylglyoxime
	3-4-5-7-10-12-15-16-20	Atomic absorption spectroscopy
	14	Dimethylglyoxime precipitation, titration with dichromate
Cu	1-2-5-6-7-11-12-13-16-17	Atomic absorption spectroscopy
	3-4-8-9-18	Colorimetric with 2,2' diquinolyl
	10	Colorimetric with bis-cyclohexanone oxalyldi-hydrazone
	14-15-20	Colorimetric with cuproine
	19-21	Colorimetric with diethyldithiocarbamate
Sn	1-6-8-9-18	Atomic absorption spectroscopy
	2-4-5-10-11-15	Colorimetric with phenylfluorone
	3-17	Iodate titration, separation as sulphide
	7-12-13-14-16-19	Iodate titration, reduction with aluminium